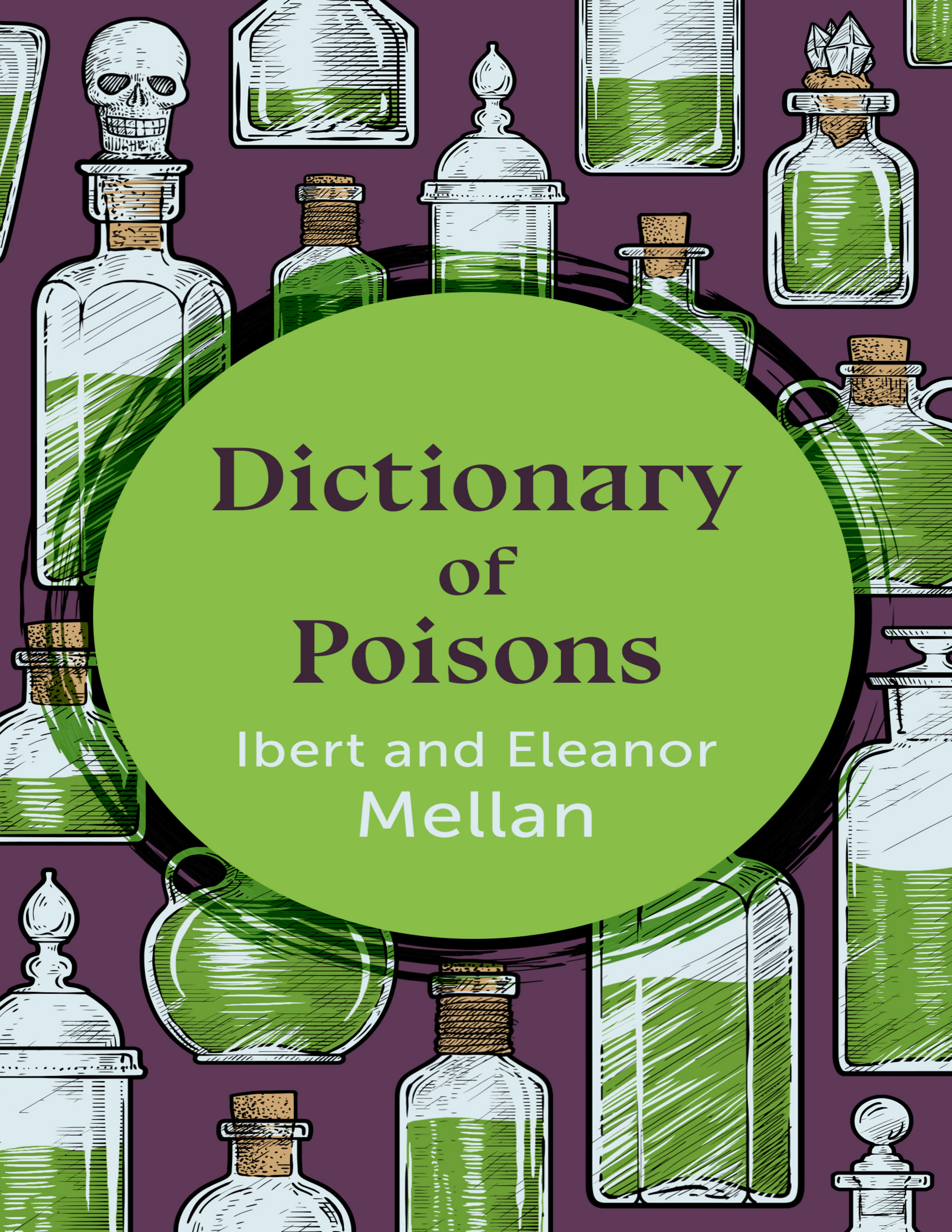

Dictionary of Poisons

Ibert and Eleanor
Mellan

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Dictionary of Poisons

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Poisons

Most of us live our precarious lives with the half conscious hope that we and our dear ones will somehow escape the terrifying hazards which constantly threaten our existence. We have come to realize that the comfortable adage, “safe at home” is no longer entirely true in view of the statistics which point out the startling fact that about 34,000 Americans are killed in the home every year. Of these, poisoning ranks third as a cause of accidental deaths in the home and a third of these occur among children who are less than five years old. These are staggering figures which cannot be ignored and calls upon the need of alertness to and eagerness in finding means by which knowledge and instrument are to be obtained in dealing with these calamities when they occur.

Accidental poisoning is but one aspect in the story of poisoning. Suicide, which is a major cause of death throughout most of the world, finds in poison an agent often unparalleled by any other in achieving this purpose. There are fashions in the choice of poisons. For many years, sugar of lead enjoyed a popularity above all others, but more recently, the trend has turned to the barbiturates, lysol, coal gas, and illuminating gas.

The only mention in the Bible of poison as a suicidal agent, occurs in II Maccabees, Chapt. X, ver. 13 which is concerned with Ptolemeus: “Whereupon being accused of (the king’s) friends before Eupator and called traitor at every work, because he had left Cyprus that Philometor had committed unto him, and departed to Antiochus Epiphanes, and seeing that he was in no honorable place, he was so discouraged that he poisoned himself and died.”

The Greeks looked upon suicide as a fine thing when done under certain conditions and they were partial to hemlock which was used for this purpose more than any other poison. Poisoning also became important as a means of execution and no more spectacular instance of this practice exists than the death of Socrates by drinking the poison-cup of hemlock.

The fine art of deliberate poisoning of another is considered by our moral code, an inhuman and heinous crime. It is the more cruel because it is done in cold-blooded secrecy and according to a carefully premeditated plan that all too frequently succeeds in avoiding suspicion and evading detection. But poisoning is an old custom which has had time to perfect itself, beginning with the poisonous arrow. This provided primitive man with an efficient tool in bringing down his prey and in wreaking vengeance on his enemies.

The early Romans found in poison so attractive a method of taking life, that professional poisoners became the fashion. A famous poisoner of that time was a woman called Locusta. She was a former slave who was pardoned from a death sentence so that she could perpetrate such poisonings deemed of value and convenience to the State. She was even required to train others in her secrets so that these should not be lost with her.

Criminal poisoning does not seem to have been common among the ancient Egyptians or Hebrews but the first law against criminal poisoning came into effect in Rome in 82 B.C. Criminal poisoning reached a pinnacle of depravity during the middle ages but nowhere else was it practiced with such boldness and assiduity than in Italy. It was not surprising then, that laws were passed there to curb and regulate the sale of poisons.

A logical development along with the discoveries made of the properties of poisons, was in finding substances that had properties of combating the effects of the poison. These early antidotes, as they were called, were strange mixtures concocted and held in great secrecy. Adromachus, Nero’s physician, developed an antidote which acquired much popularity and fame. This contained no less than 73 ingredients and Galen in the second century, after testing its action, declared it to have been successful in resisting the effects of poison and venomous bites.

The early Egyptians through their study of the properties of plants and minerals, cultivated the art of medicine. They discovered the poisonous effects of such minerals as crude arsenic, antimony, copper, and lead. Dioscorides whose *Materia Medica* was the most authoritative work on drugs for about fifteen centuries, lists many poisonous plants and mineral substances and such animal poisons as toads, salamanders, poisonous snakes, and the decomposed blood of the ox.

Most authorities seem to be dissatisfied with a single definition of a poison since it is so wide a term. Generally they are agreed that a poison is anything which when absorbed into the blood, is capable of seriously affecting health or destroying life. But this definition is qualified by taking other aspects into consideration. One is the tolerance that some persons have developed to the consumption of poisons through habitual use. In this category can be mentioned the consumption of arsenic by the Tyrolean mountaineers.

Idiosyncrasy or hypersensitivity toward substances is a factor to be considered. Foods such as milk, fish, and strawberries have produced violent toxic symptoms in some persons who have taken even small amounts. The age and the state of health of an individual also decides on the degree of toxicity that a drug or poison can exert. The form in which a drug, food, or poison is introduced into the body also determines the virulence of a substance. Examples are to be found in egg albumen and peptone which are foods when taken by mouth but when they are injected intravenously, behave as severe poisons.

There are three kinds of poisons. One are the corrosive poisons that destroy all tissue with which they come in contact. The next are the irritating poisons that inflame mucous membrane when they come in contact with it. The third are the systemic poisons that act upon one or more specific organs. Acute poisoning is brought about either by large amounts of poison in the body, or by the result of the accumulation of many small doses.

Two important considerations must be resolved when confronted with a poison victim. The first is to determine the quantity of poison consumed, and the other is to identify the poison. The symptoms often provide a clue. One may with comparative safety, administer Universal Antidote which should be followed by an emetic. This can do little harm and may very well save a life.

Although the identification of the poison would be of inestimable value, it is not absolutely essential in the successful treatment. In very many instances, it is difficult or even impossible to determine the nature of the poison especially in the case of child poisoning since they are not as helpful in communicating the source of their trouble.

It is well for the one administering first-aid to keep several useful facts in mind. The first approach is to make the person or persons in distress more comfortable and to do what you safely can to retard the progress of the injury until the physician arrives. Do not delay in calling or having someone else call a physician to take over. Proceed to allay the fears of the victim and to speak softly at all times.

To render first-aid effectively, avail yourself of as much information about the cause of poisoning as can be gathered quickly. Examine the label of a container suspected as the cause of poisoning for any statement of an antidote and follow its directions as carefully as possible. An unconscious person must never be given anything by mouth. Proceed to remove the poison by using an emetic. If a stimulant is needed, you may achieve the purpose with a drink of cold water or if hot coffee is quickly available, it will serve adequately. Aromatic Spirit of Ammonia as a stimulant will produce quick results. Above all, remember to stop when you have done enough. Do not be carried away by doing more than is required.

When the physician arrives, inform him of what first-aid measures you have followed and stand by to assist him in every way possible.

EMERGENCY TREATMENT

It is essential to prevent the poison from being absorbed into the body in order to lessen the need for further treatment. To do this, give the victim an antidote and follow this by giving him an emetic which will rid him of the poison. This is the first and essential step to follow when treating a case of poisoning since the primary concern is to remove the poison from the stomach or other parts of the body. Vomiting should be induced when the poison is in the stomach or neutralize the poison either by an acid when an alkali is the offending substance, or by an alkali when the poison is an acid, or cause the poison to become insoluble by using an antidote and thereby making it relatively harmless.

REMOVAL OF POISONS

The use of Emetics

If the victim is vomiting, give him a large quantity of luke-warm water. At this time avoid the use of an emetic.

An emetic should not be used when poisoning is due to a corrosive or irritating poison such as caustic alkalies or acids. This precaution is necessary to prevent further damage to the stomach and esophagus. If the lip, mouth, and tongue are stained or burned, it is an indication that a strong chemical has been swallowed and vomiting should not be induced.

A single vomiting may not rid the stomach of all the poison and therefore, more liquid may be required to be given the victim to induce repeated vomiting. The end result should be a clear vomit.

The Antidote may be a chemical which neutralizes a poison or changes its physical state to one where its absorption is prevented or retarded. Often this new compound or mixture formed, is only a little less toxic than the original poison making it doubly necessary to remove both the poison and the antidote from the stomach. This is achieved by administering an emetic.

METHOD FOR PREPARING ANTIDOTES

No. 1 Dry Mustard as an Emetic

Add 1 teaspoonful of dry mustard to 1 glassful of luke-warm water. Induce the victim to swallow ¼ glassful of this mixture and to drink a glassful of lukewarm water. Continue this procedure at 1 or 2 minute intervals 3 times more until all of the mustard mixture and 4 glassfuls of lukewarm water have been consumed.

No. 2 Sodium Chloride (Table Salt) as an Emetic

Dissolve 2 tablespoonfuls of sodium chloride in a glassful of lukewarm water and induce the victim to swallow this. Repeat this procedure in 2 minute intervals until 4 glassfuls have been swallowed.

No. 3 Copper Sulfate as an Emetic

Dissolve a third of a vial of copper sulfate (about 7.5 grs. or ½ Gm.) in a glassful of lukewarm water and make the victim drink this. Follow with a glassful of lukewarm water. Repeat this procedure in 15 minutes and again in another 15 minutes.

No. 4 Zinc Sulfate as an Emetic

Dissolve a third of a vial of zinc sulfate (about 20 grains) in a glassful of water and induce the victim to drink this. Repeat this procedure in 15 minutes and again in another 15 minutes.

No. 5 Powdered Ipecac as an Emetic

Add a third of a vial of powdered ipecac (about 20 grains) to a glassful of water and induce the victim to swallow it. Follow this with a glassful of lukewarm water. This procedure should be repeated once or twice more.

No. 6 Soapy Water as an Emetic

When an emetic is not available, administer soapy water. The procedure for preparing it is as follows:

Place a piece of mild soap in a quart milk bottle half filled with water. Shake until the solution becomes soapy and suds appear on the surface of the water. Induce the victim to drink a ¼ glassful of this soap solution and follow with a glassful of lukewarm water. Repeat this procedure three more times at intervals of 3 to 5 minutes.

DEMULCENTS

Demulcents are used for their soothing effect on inflamed membrane. These should be cool when administered. Some demulcents which are readily available are milk, white of egg, a gelatin or albumin solution, etc. These demulcents form a protective coating over the irritated membrane.

No. 7 White of Eggs as a Demulcent

Dissolve the whites of 3 eggs in a glassful of lukewarm water. Cool and administer.

No. 8 Gum Arabic as a Demulcent

Add 1 or 2 tablespoonfuls of Gum Arabic in ½ glassful of warm to hot water, stir until dissolved. Cool and have the victim swallow this. If the physician has not yet arrived, repeat this soothing drink.

No. 9 Mineral Oil as a Demulcent

Give the victim ½ to ¾ of a glassful of mineral oil.

No. 10 Olive Oil or Salad Oil as a Demulcent

Administer ½ to ¾ glassful of olive oil or salad oil.

No. 11 Milk as a Demulcent

Give the victim ½ to 1 pint of milk.

No. 12 Flour or Cornstarch or Starch as a Demulcent

Mix 3 or 4 tablespoonfuls with a glassful of water and administer.

No. 13 Cereals as a Demulcent

Any cooked cereal can be used as a demulcent. The cereal should be thinned with either milk or water.

CATHARTICS

When the victim complains of abdominal pains a cathartic SHOULD NOT BE USED. Cathartics should be given only when the poison is of such a nature that it is absorbed quickly or when the poison has been swallowed for several hours before first-aid has been given.

No. 14 Milk of Magnesia as a Cathartic

Give 1 to 2 teaspoonfuls of milk of magnesia.

No. 15 Mineral Oil as a Cathartic

Give 1 to 2 tablespoonfuls of mineral oil.

No. 16 Proprietary Cathartics

Many of the mild cathartics can be used which are made available by reputable drug companies.

No. 17 Magnesium Sulfate (Epsom Salt) as a Cathartic

Add 1 to 2 tablespoonfuls of epsom salt to ½ glassful of warm to hot water, stir until dissolved. Cool and administer.

No. 18 Stimulants

Stimulants are aids in the prevention of collapse. Strong coffee or tea are stimulants. Make a strong infusion and sweeten if desired. Children should be given tea.

No. 19 Aromatic Spirit of Ammonia as a Stimulant

Give the victim 1 teaspoonful of Aromatic Spirit of Ammonia in ½ glassful of water.

No. 20 Keep the victim warm and quiet. Use a blanket but do not use a hot water bottle. Raise the foot of the bed.

BURNS

Burns may occur over a limited area or an extensive area. The severity of burns are classified into:

First Degree Burns: These redden the outer skin layer without forming blisters.

Second Degree Burns: These cause blistering but there is no deeper skin destruction.

Third Degree Burns: These destroy all the skin layers.

EMERGENCY TREATMENT FOR BURNS

Cover a burn of limited extent with a piece of gauze or clean cloth moistened with a warm solution of sodium bicarbonate (baking soda) made by dissolving 2 tablespoonfuls in a quart of water. Keep moist and warm until the physician comes. If picric acid gauze is available, apply and keep it moist and warm.

In severe burn cases, keep the victim quiet and have him lying down, and keep warm by applying external heat. Encourage the drinking of generous quantities of water.

CALL A PHYSICIAN!

CHEMICAL BURNS

When the burn is caused by an acid, neutralize it with sodium bicarbonate (baking soda). When the burn is caused by an alkali, wash the area with boric acid solution. When other chemicals have caused the burn, wash the area thoroughly with soap and water or with alcohol to remove most of the offending chemical, and keep moist and warm with gauze moistened with a sodium bicarbonate solution.

External Burns: When the poison adheres to the victim's lips, mouth, face or any other part of the body, wash it away with large quantities of water or soap and water. Should some of the poison continue to adhere to the skin or mucous membrane, neutralize as follows: When the poison is an alkali then neutralize with a mild acid such as acetic acid, citric acid, vegetable juices, fruit juices, or ascorbic acid. When the adhering poison is an acid, then neutralize with an antidote such as milk of magnesia paste, sodium bicarbonate (baking soda), or soap.

Eye Burns: When the eyes are burned by an alkali, neutralize by washing them with a 3 to 5% solution of sodium bicarbonate (baking soda).

Eye Pain: To relieve the pain which may result from a burn, use an analgesic eye ointment such as are made available by reputable drug companies.

POISONING BY GAS

The victim overcome by gas should immediately be given fresh air and if needed, artificial respiration should be supplied. An inhalator, when at hand, should be used together with artificial respiration. However, avoid all vigorous methods of artificial respiration. When the victim revives, keep him warm and quiet.

CALL THE POLICE FOR AID!

The Police Department is equipped with the proper apparatus for such emergencies.

No. 21 Universal Antidote

Add 2 to 3 tablespoonfuls of universal antidote to ½ glassful of lukewarm water. Induce the victim to swallow this slowly. This antidote should be used for poisonings caused by acids, drugs, chemicals, and metal salts. After this antidote is used, it should be followed by an emetic, EXCEPT WHEN CORROSIVE SUBSTANCES HAVE BEEN TAKEN.

No. 22 Soap Enema

Dissolve 1 ounce of a neutral soap in about 1 to 2 pints of lukewarm water. Administer through the rectum.

POISONS COMMONLY FOUND IN THE HOME

Kerosene, commonly known as lamp oil, coal oil, and range oil, is often used for lighting and heating purposes.

Home Dry Cleaning with gasoline, naphtha, or benzine. Although these substances are explosive they are nevertheless often found in the home.

Carbon Tetrachloride.

Insect Sprays. These substances as well as the solvents in which they are dissolved, offer large sources of poisoning.

Quick Drying Paints.

Light Fluid.

Chemical Sets for Young Children.

The Medicine Cabinet. This is one of the most dangerous places found in the home. It is often the storage place not only for medicines, but also for hair tonic, shave lotions, disinfectants, rodenticides, first-aid household remedies, etc.

The Cleaning Closet. The repository for cleaning fluids, ammonia, bleach, soap powder, synthetic detergents, polishes of various kinds, disinfectants, rodenticides, paints, varnishes, etc.

ECONOMIC POISONS

Economic poisons more familiarly known by their earlier names of "insecticide, fungicide", etc. have made their appearance with such rapidity that time has not sufficiently established the extent of their safe usage. These chemicals should be considered and used with adequate caution since, as their title so appropriately indicates, these are primarily poisons for insect life but in sufficient concentration, they can be poisons for humans as well.

Human poisoning may occur when exposure to economic poisons causes their entrance into the eyes, nose, mouth, or upon the skin and by consuming crops or livestock treated with them.

An economic poison is any substance which is used as an insecticide, fungicide, rodenticide, or herbicide. These are subdivided for convenience, into the following subgroups.

Stomach Poisons. These are substances which act upon the insect after it has swallowed the poison.

Contact Insecticides. They destroy the insects when they come in contact with it. These make their appearance as Summer Contact Sprays, Household Contact Sprays, Cattle Sprays, Live-Stock Sprays and Dips, Aerosol Sprays, and Spray-Dusts.

Repellents and Deterrents. These chemicals repel insects.

Attractants. As their name indicates, these attract insects into traps.

Synergists. These substances are used with other economic poisons in order to increase their effectiveness.

Fumigants. These are applied in enclosed spaces.

Fungicides. There are two types of fungicides. Type one prevents the development of fungi and type two kills the fungi when it comes in contact with them.

Herbicides. These are used to either prevent the growth of plants or to destroy them.

Rodenticides. These either repel or kill rodents.

Wood Preservatives. These repel or destroy animal life which attack wood.

DENATURED ALCOHOL

Denatured Alcohol is a frequent source of poisoning since it is used so widely in industry as well as in the home.

A

ACETANILIDE

Acetanilide was first introduced into medicine in 1886 and was mostly welcomed because of the two distinct actions of which it was capable. It affects the heat-regulating mechanism and pain perception. This organic chemical made from coal tar chemistry, appeared at the same time as antipyrine both being first of the synthetic antipyretics.

Acetanilide also known as antifebrin, is a common ingredient in headache remedies and because this drug is consumed so freely, poisoning is not unlikely. Its antipyretic action by which it lowers fever temperature, adds considerably to the dangers invited by large ingestions of the drug. Circulatory collapse has been known to occur by sudden reduction of body temperature.

Habitual use is liable to cause depressant action on the heart muscle leading to collapse, nausea, vomiting, and because the red corpuscles lose their power to carry oxygen, the lips and nails become blue.

ACETANILIDE

Possible Cause of Poisoning: This is used in medicine and as a rubber accelerator.

Symptoms: Nausea and vomiting, Loss of body temperature, Sluggishness, Collapse.

Antidote and First Aid Treatment:

1. If vomiting has not occurred, give an emetic such as dry mustard (See No. 1).
2. If a stimulant is needed, give hot tea or coffee or Aromatic Spirit of Ammonia (See Nos. 18 or 19).

3. Keep the victim warm and quiet.

CALL A PHYSICIAN!

ACETONE

Acetone is unique among chemical discoveries. Having made its first appearance in a desperately critical time of history, it is glorified by having helped to make history. Having first been conceived for purposes of destruction, acetone became the instrument that assured the creation of the new state of Israel.

Chaim Weizmann, a chemist who taught and worked in England, developed in 1916 a synthetic process for making acetone in which corn starch was fermented by a micro-organism, Chlostridium acetobutylicum. This gave to the Allies of World War I an invaluable chemical used in making explosives which proved decisive in the war. Weizmann who was an ardent Zionist, received as a compensation for this service, a promise of support by the English government for the establishment of Palestine as a Jewish national homeland. This was assured in the Balfour Declaration issued in 1917.

Acetone has since become one of the most widely used solvents in industry. It is now made by chemical synthesis. Serious poisoning from acetone is not too frequently encountered except where one is continuously exposed to its volatile vapor.

Generally, acetone resembles alcohol in its physiological effects. Acute intoxication results from exposure to its vapors which are absorbed through the skin, causing such narcotic effects as headache, heaviness in the head, a feeling of oppression, and bad dreams.

ACETONE

Possible Cause of Poisoning: It is used in motor fuel, rubber cement, as a solvent for dopes and varnishes, denaturant for alcohol, disinfectant and cleansing agent, and nail polish remover.

Symptoms: Headache, Vomiting, Feeling of oppression, Drowsiness, Small pulse, Coma.

Antidote and First Aid Treatment:

If Overcome by Inhalation:

1. Remove victim to fresh air.
2. Artificial respiration may be needed.

If Swallowed:

1. Give an emetic such as Sodium Chloride (See No. 2).
2. Give a stimulant such as Aromatic Spirit of Ammonia (See No. 19).

ACETYLCHOLINE AND DERIVATIVES OF CHOLINE

Symptoms: Sweating, Salivation, Purging, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia. Strong tea or coffee may also be given (See Nos. 18 or 19).

CALL A PHYSICIAN!

ACIDS

The poisonous nature of acids are generally recognized and invite a respectful approach to their use. How old is the knowledge of acids and to what extent were they understood in the ancient world are not adequately revealed in the records available to us.

Basil Valentine of the fifteenth century, who has won fame by his work “The Triumphant Chariot of Antimony,” reveals in this work that he was acquainted with a method of making both hydrochloric and sulfuric acids.

Geber, living in the eighth century, is reputed to have discovered sulfuric acid oil of vitriol, nitric acid “aqua fortis,” and nitrohydrochloric acid “aqua regia.” Raymond Lully, living in the thirteenth century, is credited with the earliest description of a method for preparing nitric acid.

We owe much to Robert Boyle who in 1675 published his famous “Reflections upon the Hypothesis of Alkali and Acidum.” This work describes the general properties of acids and alkalies which helped in setting the course of continued chemical developments. The discovery of chlorine, iodine and bromine early in the nineteenth century, gave rise to new concepts of acids, bases and salts which formed the foundation for the development of modern chemistry.

The sulfuric acid industry which has grown to giant size and is the cornerstone of the entire chemical industry, owes much to Dr. Roebuch of Birmingham who in 1746 constructed the first lead chamber for its manufacture. Other constructions were later developed notably the Gay-Lussac tower and the Glaver tower.

The word acid comes from the Latin “acidus” meaning sour which describes its taste. Acids vary in their corrosive properties from the mild acetic acid or vinegar to the highly poisonous carbolic acid. Some of the acids most dangerous to human life are sulfuric, hydrochloric, nitric, oxalic and hydrocyanic acids. A common symptom of poisoning shared by most of them is an intense burning sensation from the mouth to the stomach.

ACIDS

Caution: Do not use an emetic, bicarbonate, or carbonate.

Symptoms: Pain in throat and stomach, Vomiting, Convulsions, Collapse.

Internal Treatment:

Antidote and First Aid Treatment:

1. Give the victim 2 to 4 tablespoonfuls of Milk of Magnesia paste or powder in a glassful of cool water. The amount of Milk of Magnesia given will depend upon the amount of acid taken.

2. Give a Demulcent such as Gum Arabic (See No. 8).
3. Make the victim swallow large quantities of water.
4. Keep him warm and quiet.

External Treatment:

Symptoms: Burns on lips, mouth and other parts of the body that were in contact with the acid.

First Aid Treatment:

1. Wash the area with large quantities of water.
2. Apply a paste of Milk of Magnesia. A paste of Sodium Bicarbonate (baking soda) and water may be used.

Possible Cause of Poisoning: These are used in industry, medicine, chemical laboratories, etc.

CALL A PHYSICIAN IMMEDIATELY!

ACONITE

Aconite is an attractive plant, belonging to the buttercup family. But its beauty is deceptive because every part of the plant is highly poisonous and acrid. All too frequently, its roots have been mistaken for horseradish and its greens have been used in a salad with disastrous consequences.

Plutarch describes an incident caused by the eating of aconite which occurred to the army led by Mark Antony against the Parthians. The soldiers being short of provisions, dug up roots and pot-herbs that brought on madness and death. “The eater immediately lost all memory and would busy himself in turning over every stone he met with, as if on some important pursuit. … till at last they were carried off by bilious vomiting. … Whole numbers perished. …”

Aconite has been well known to the ancients and its poisonous character was so fully recognized that it earned the name “Queen Mother of Poisons.” It was used by the ancient Chinese, the hill tribes of India and even in ancient

Gaul. It was used as a remedy by the physicians in the thirteenth century as described in the old Welsh manuscript “The Physicians of Myddvai.”

Other names by which aconite is known are monkshood, wolfsbane, leopard’s bane, and women’s bane. How it has acquired the name aconite is not accurately known. Some believe it was derived from the Greek word Aconas for bare rocks on which it grows naturally. Theophrastus said that it was named after the town Aconae near where the plant “groweth abundantly.” Others say that the name is derived from the Greek word for arrow or javelin on which aconite was used as a poison by “some barbarous nations.”

Not before the careful study of the action of aconite as a drug, made by Storck of Vienna in 1762, was aconite introduced to modern medicine. It was first admitted to the London Pharmacopoeia in 1788 and appeared in the first U.S.P.

Aconite grows natively in the mountainous regions of Switzerland, France, Germany and Spain. It is also found in the mountains of the United States and is common along margins of streams. It is also cultivated in gardens for its attractive helmet shaped flowers that range in color from deep violet to yellow, to white according to its species. The species recognized as official and which appears in nearly all pharmacopoeias, is Aconitum Napellus Linne of the Family Ranunculaceae. India claims a species of aconite, Aconitum ferox, the root of which is used to supply the famous Indian (Nepal) poison known as bikh, bish, or nabee. This variety owes its virulence as a poison to the presence of the alkaloid pseudaconitine which is said to be the most deadly poison known.

The virulence of aconite is due to the complex alkaloid aconitine the exact nature of which is not known with certainty and since the potency of the alkaloid cannot be satisfactorily standardized, it is no longer included in the English and American pharmacopoeias. Other alkaloids are present in aconite but these are less toxic than aconitine.

Although the first effect of aconite is in the nature of a stimulant, it changes and becomes a paralyzant to the nerves of pain, touch, and temperature. When applied to the skin or mucous membrane, the effect produced is a tingling sensation. An early use for aconite was as a local application in the relief of neuralgia. It is now largely used as a cardiac and nerve sedative.

As a poison, aconite is rapidly acting and powerful in effect. It produces first a sensation of warmth in the stomach, sometimes nausea, slowing of pulse and respiration, a moist and cool skin, and finally profound prostration. The most important symptom as *a* means of identification is the tingling and numbness felt in the lips, mouth, and sometimes in the fingers. Aconite has fallen considerably in the confidence of the medical profession because the drug is so variable in potency, and moreover, the range between the therapeutic and toxic doses are far too close.

ACONITE AND ACONITE CONTAINING PREPARATIONS

Symptoms: Nausea and vomiting. Tingling sensation in lips and mouth, Diarrhea, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia. Hot tea or coffee may also be given (See No. 18 or No. 19).
4. Keep the victim warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

ACRYLONITRILE

Possible Cause of Poisoning: It is used in the rubber industry and as a fumigant.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove victim to fresh air.

2. Artificial Respiration may be needed.
3. If the victim is conscious, give Aromatic Spirit of Ammonia (See No. 19).
4. Keep the victim warm and quiet and in a lying position.

If Swallowed: Victim is still conscious.

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. If a Stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN IMMEDIATELY!

ADRENALIN

Possible Cause of Poisoning: This is used in medicine.

Symptoms: Anxiety, Throbbing headache, Dizziness, Tremor.

Antidote and First Aid Treatment:

1. Rest and quiet. Calm the fears that arise.

CALL A PHYSICIAN IMMEDIATELY!

ALKALIES

The alkalies are the direct antithesis of acids and like them, are of infinite importance as chemical tools in our every day life. The earliest alkalies were obtained from the ashes of sea plants and plants from the earth which were then leached out, or dissolved out, to yield sodium carbonate from the one and potassium from the other.

There was no early knowledge of their true chemical nature but in the time of Pliny in the first century A.D., these ashes were used in the manufacture of soap which is said to have been originally discovered by the Gauls. At that time they were also aware that a hard soap was obtained with soda ash and a soft soap with potash.

Alkali is the Arabic word originally applied to the ashes of the saltwort and glasswort plants but it later designated the group embracing all compounds sharing the common characteristics of neutralizing acids and forming salts. It is distinguished from an acid or neutral substance by its action on indicators such as litmus, tumeric and others.

For many centuries both soda ash and potash were considered fixed alkalies and ammonium carbonate as a volatile alkali, until in 1736 Duhamel du Monceau recognized that a difference existed between the two types of ashes. Lavoisier, the great French Chemist of the eighteenth century, hastened the way to understanding the nature of alkalies by suspecting that potash and soda were not elements and found them analogous to ammonia. Sir Humphrey Davy is credited with the discovery of potassium and sodium as metals when he released them from the ashes with electric current. This discovery speeded the processes already in motion that were shaping our modern world of chemical wonders. Soap, glass, bleaches, fertilizers, disinfectants, medicines, and many more useful substances were now made possible on a large scale.

Ammonia, another alkali of importance, was known to the ancients since it is a product of putrefaction. Pliny called it the vehement odor and Priestley later referred to it as an alkaline air. Ammonium hydroxide, ammonia water, is a familiar substance as an agent in cleaning, bleaching and removing stains. In common with other alkalies, it is a strong corrosive poison and it is often found useful in homicide and suicide. Ammonia is very volatile and its fumes can be very dangerous.

When alkalies have been ingested either by accident or design, the first symptoms are a burning and constriction in the mouth and throat, thirst, vomiting and abdominal pain. Shock may sometimes occur.

ALKALIES, CAUSTIC

Possible Cause of Poisoning: These are widely used in industry, in cleaning preparations, etc.

Symptoms: Pain in mouth, throat and stomach, Vomiting, Convulsions, Collapse.

Internal Treatment:

Antidote and First Aid Treatment:

1. Give an Antidote such as vinegar (½ to 1 oz., 15-30 cc.), Citric Acid, dilute orange juice, or lemon juice. The amount given will depend upon the amount of alkali taken.
2. Give a Demulcent such as Gum Arabic (See No. 8).

External Treatment:

Symptoms: Pain in the affected parts, Tissue may be destroyed.

Antidote and First Aid Treatment:

1. Wash with large quantities of water. Apply a paste of boric acid and water.

   If the alkali has entered the eyes: Wash with a saturated solution of boric acid.

CALL A PHYSICIAN IMMEDIATELY!

ALKALOIDS

(Powerful Active Principles of Drugs)

Possible Causes of Poisoning: These are used as drugs and some are used as insecticides.

Symptoms: These vary with the drug taken.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21)
2. Give an Emetic such as mustard (See No. 1)
3. Keep the victim warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

ANILINE DYE POISONING

Possible Cause of Poisoning: Poisoning may occur by absorption or ingestion of marking dye or ink for hospital linen, diapers, wash cloths, indelible pencils.

Symptoms: Skin turns blue, Vomiting, Marked apathy.

Antidote and First Aid Treatment:

Remove Source of Poisoning.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2)
3. If Ascorbic Acid is available, give the victim 100 Mgs.

CALL A PHYSICIAN IMMEDIATELY!

ANTIMONY

Antimony is one of the oldest metals known and has long engaged the interest of medicine and chemistry. The Egyptians who called the sulfide of antimony stimmi, used it as long ago as 4000 B.C. Their women applied it as a cosmetic for darkening their eyebrows and eyelids and it is still used there and in other parts of the East for this purpose, now under the name of “kohl”. The alchemists in their continuous search for the ideal substance able to answer to all things, worked with it and formed alloys and salts of antimony.

Basil Valentine, a Benedictine monk living in the fifteenth century, came into fame through his experiments with the salts of antimony. He fed small quantities to his unsuspecting brother monks and recorded the results in a work called the “Triumphal Chariot of Antimony.” The name antimony, having originated from this time, takes its meaning from the French word anti-moine or “hostile to monks”, a wry commentary on the havoc caused among those unfortunate victims.

Valentine describes a number of compounds he succeeded in making with antimony among which were formulae for butter of antimony, antimony trichloride, and the basic chloride of antimony, later given the name of Algaroth's powder. This powder also known as the "mercury of life" came into popularity as an emetic in the sixteenth century after its introduction as a medicine by Victor Algarotti, an Italian physician.

"Antimony cups" were made from a compound of antimony and tin, and used in the sixteenth and seventeenth centuries which when filled with wine and allowed to remain for a while, dissolved out some of the antimony in the form of tartar emetic. The wine was drunk to cause vomiting, a favorite practice in the monasteries as a punishment for monks who drank too freely.

Kermes Mineral, an antimony sulfide, was discovered by Glauber in the middle of the seventeenth century and became very popular because wonderful cures were ascribed to it. It was particularly popular in France as remedies for many diseases among which were syphilis, smallpox, dropsy, and ague. Since the process for making this orange-red powder was a guarded secret, it cost King Louis XV a considerable sum to buy the formula.

Antimony as a metal is brilliant, silver-white, hard and brittle. Most of the world's supply comes from China in the form of its ore, stibnite. As remedies for internal use, only the salts of antimony are employed but it was a common practice several centuries ago, to administer the metallic antimony in pill form. These pills were known as Pilulae Perpetuae or everlasting pills, a fitting name that described the practice of recovering them from the stool of the patient and after cleansing them using them over and over again.

The activity of the salts of antimony depends on the degree of solubility in the gastric juices and whether the salt is trivalent or pentavalent. The pentavalent salt is comparatively harmless. Antimony potassium tartrate better known as tartar emetic, is the most frequently used preparation of antimony and very poisonous. Many of the patent cough syrups and other medicinals contain tartar emetic, these holding a risk for the very young, or very aged, and for persons with feeble circulations.

In industry antimony presents a serious hazard through the inhalation of its dust and fumes. It is not unusual to mistake the symptoms of antimony poisoning for an ulcer, or cancer of the stomach or even cholera. The symptoms have more often been mistaken for arsenic poisoning which it resembles closely.

ANTIMONY CONTAINING COMPOUNDS

Symptoms: Metallic taste in the mouth, Vomiting, Pain in mouth, throat and stomach, Spasms in fingers, arms and legs, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 2).
3. Give a Demulcent such as Gum Arabic (See No. 8).

Possible Cause of Poisoning: Sweetened antimony and potassium tartrate is used as an orchard spray. Antimony is present in the enamel coating of cooking utensils.

“ANTU”

Alpha-Naphthylthiourea

Possible Cause of Poisoning: This is used as a rodenticide. It is more effective against the Norway rat which is the common gray rat, than the black or Alexandrian rat.

Antidote and First Aid Treatment:

1. Give an emetic such as Sodium Chloride (See No. 2).
2. Keep the victim warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

APOMORPHINE

Possible Cause of Poisoning: This is used in medicine.

Symptoms: Intense vomiting, Flow of tears, Exhaustion, Collapse.

Antidote and First Aid Treatment:

1. If vomiting has not begun, give Universal Antidote (See No. 21).
2. Give Aromatic Spirit of Ammonia and follow with large quantities of water (See No. 19).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

ARNICA

Symptoms: Nausea and vomiting, Loss of body temperature, Pallor.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. If vomiting has not begun, give an Emetic such as mustard (See No. 1).
3. Give a Demulcent such as Gum Arabic. White of eggs followed by milk may be given (See No. 8).

CALL A PHYSICIAN!

ARSENIC

Arsenic has for centuries held a peculiar fascination for the poisoner, exciting his imagination more often than any other substance able to serve his nefarious ends. This metallic element is widely distributed in nature. Sometimes it is found free but more often found in ores known as realgar and orpiment, both being sulfides of arsenic.

Arsenic in the form of realgar and orpiment was known by the Greeks in the fifth century B.C. Hyppocrates, known as the father of medicine, recorded his use of arsenic as an external cure for ulcers and other skin eruptions. Dioscorides in the first century A.D. mentioned a similar use of arsenic. The early alchemists were fascinated by it, thinking it the key to the Philosophers’

Stone and attempted to extract gold from it as the yellow color of orpiment seemed to suggest. With the discovery of white arsenic, arsenic trioxide, by Geber, an Arab alchemist of the eighth century A.D., a phenomenal surge of interest in arsenic took place. White arsenic opened wide the opportunities not only as an internal medicine, but as a highly useful instrument as a poison since it had little taste and no odor, excellent properties for evading detection.

In Italy where the art of poisoning was so highly developed by the Borgias, arsenic took first place. The Borgias are considered to have shown more ruthlessness as poisoners than any in history. But in justice to them, poison was a convenient weapon in the social and political life of Italy in that time. It provided the politician with a means of removing interference to a coveted office, theologians found it indispensable for the dispossession of an enemy, and husbands and wives found it a great convenience in disposing of marital problems for either party.

Various formulae have been suggested as the one in the secret poison employed by the Borgias under the name of “Canterella”. Since arsenic was so commonly used in Italy at that time, it is thought to be the most likely ingredient. A further substantiation is seen in the signet ring worn by Cesare Borgia which contained a secret receptacle that would more logically hold a substance such as arsenic.

An arsenic solution sold in vials, achieved great popularity in Naples during 1659. It was made by one called Toffana who promoted it as a cosmetic lotion under the name of “Manna of St. Nicholas “, and “Aqua Toffana”. This preparation offered to that corrupt era a convenient form of poison and 600 deaths were attributed to its use.

The tonic and stimulating effect of arsenic is highly prized in Styria and the Tyrol where amazing quantities are consumed by mountaineers to assure them of easier breathing and a firmer footstep when climbing. To seek an explanation of this remarkable tolerance, one may consider the form of arsenic consumed. It is said that the arsenic used is a less soluble compound and therefore little is absorbed.

In medicine the inorganic preparations are far more dangerous than the organic compounds and their use is always preceded with great caution.

Since the elimination of arsenic from the body is slow, taking many weeks to accomplish fully, the greatest danger is to be found in its cumulative action. A peculiarity in arsenic elimination, is that it makes its appearance in the hair and nails which can be detected within two weeks of use.

Arsenic presents a serious hazard in many industries and in food contamination. It exists naturally in a variety of fish and as a contaminant on fruits and vegetables previously sprayed with insecticides and fungicides. As a step in controlling this form of contamination, the government has set restrictive limits on the amount of arsenic that may be found on foods.

Arsine, known as arseniureted hydrogen, is a dreaded industrial poison since it forms readily when arsenic is in the presence of hydrogen. Being a colorless gas, it is fortunate that it can be detected by its offensive garlic-like odor.

As a protoplasmic poison, arsenic combines with proteins and causes general damage to capillaries and small arterioles by increasing the dilation and permeability. Some of the symptoms of poisoning are vomiting, diarrhea, dehydration, convulsions, general paralysis, and coma. Death may be caused by shock or severe gastroenteritis.

ARSENIC CONTAINING PREPARATIONS

Symptoms: Pain in stomach, Vomiting, Cramp, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a large quantity of water to drink.

CALL A PHYSICIAN!

ASPIRIN

Aspirin is unsurpassed as a remedy for the relief of so many of our minor ailments and discomforts that it is an unfailing item on every medicine shelf.

This excessive reliance on its virtues has caused it to become one of the most abused of drugs.

Aspirin, which is chemically acetylsalicylic acid, was synthesized by Dreser in 1899 by acetylizing salicylic acid. The name aspirin was not chosen arbitrarily. When salicylic acid was first discovered in the leaves of the plant Spiroea ulmaria, it was known as acidum spiricum from which aspirin took its name.

We are accustomed to thinking of aspirin as quite harmless but more frequently than is known, large doses are taken with suicidal intent. Children too are frequent victims of the careless ease in which they can take possession of them. In individuals suffering from allergies and asthma, and in those who are very susceptible to its action, serious poisoning may occur, sometimes leading to death. In such cases, a dose as little as two grams can be the cause of death. Under usual circumstances, an adult will require the ingestion of from 15 to 30 grams before it becomes fatal.

In severe poisoning, the kidneys are damaged. Some of the symptoms are fever, hemorrhage, excitement, confusion, convulsions, and coma.

ASPIRIN

Symptoms: Nausea and vomiting, Faintness, Sweating, Collapse, Delirium.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an emetic such as mustard (See No. 1).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN!

ATABRINE

Symptoms: Nausea, Vomiting, Diarrhea, Pain in stomach, Stupor.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN!

B

BARBITUATES

The barbiturates are one of the great medical discoveries of this century. Yet in the public mind mistrust and fear are associated with these drugs best known as sleeping pills. This becomes clear in view of the frequent headlines of newspapers blaring the news of the death of prominent figures in the theater, movies, and society, good and bad. The fascination wrought by these morbid adventures, usually set off a wave of imitative suicides. It is estimated that next to carbon monoxide, the barbiturates are the most frequent cause of poisoning either by accident or by suicidal intent.

No less alarming are the stories of young people who in seeking a thrill, take what is known as “thrill pills,” or “goofballs,” with other names equally as descriptive. These pills are a combination of a barbiturate and a stimulant such as benzedrine, which produce a strange form of intoxication that impels the victim into bizarre behavior that often leads to crime. Above all, the stigma of addiction has set these drugs apart.

And yet despite these unsavory aspects of the use of barbiturates, the medical world has embraced them with enthusiasm as a boon to mankind. Their position is nearer in importance to the sulpha drugs and antibiotics. Here finally, are drugs with suitable properties that make possible a controllable means of depressing the central nervous system to any desired degree, beginning at one end with slight sedative action and ending with deep anesthesia. Considering the two million doses of barbiturates taken in the United States daily, unforeseen or toxic effects are comparatively rare. This is possible because of the great margin of safety existing between the clinical dose and the lethal one. These drugs are also hailed as a release from the dependence on less desirable drugs formerly used to induce sleep. These drugs included paraldehyde, bromides, and chloral hydrate and the hypnotics of long standing, hashish, opium and alcohol.

Barbituric acid, the basis for the large number of barbiturates in use, was first prepared by a German scientist, Adolph von Baeyer in 1864. Following the later publication of the work of two German scientists, Fischer and von Mering, on the hypnotic properties of diethylbarbituric acid, better known as Veronal, literally hundreds of closely related compounds have been prepared. About twenty-five of these compounds are in more general use today.

The barbiturates are synthesized from malonic acid found in apples, grapes, and other fruits, and urea, a solid substance first discovered in animal urine. The four compounds recognized as official by the U. S. Pharmacopoeia are Barbital, Phenobarbital, Pentobarbital, and Thiopental. Many other compounds are listed in the N.F., and N.N.R., which provide them with a standard of recognition. All barbituric acid derivatives are slightly soluble in water and form watersoluble salts with alkalies such as sodium, calcium, and magnesium.

Because of a difference in structure, the barbiturates vary in the speed, duration and intensity of their effectiveness. They can also be made to have hypnotic, sedative and even anesthetic action. To appraise the relative value of the barbitmates, such factors are taken into consideration as promptness and duration of effect, and this is considered the most practical basis of classifying them. Judging by these factors, their action is considered long, intermediate or short according to the interval between the administration and exhibition of their therapeutic effect.

The more notable members of the long acting group, 4-8 hours, are Barbital and Phenobarbital; drugs of moderate duration, 4 hours, are Amytal and Pentobarbital; those in the short acting group, 2 hours, are Evipal and Seconal; and the ultra-short acting drugs, Evipal sodium, Kemithal sodium, and Pentothal sodium, are used almost exclusively for intra-venous anesthesia.

The chief action exhibited by the barbiturates, is in the depression of the central nervous system, particularly the higher centers of the brain. The intensity and duration of depression is determined by the chemical structure of the barbiturate used, the manner in which it is administered, and by the size of the dose. A small dose will cause a slight depression giving the effect of a sedative, larger doses are hypnotic in effect and cause the onset of natural sleep, while large doses or a high concentration in the blood, since the barbiturates are cumulative in action, produce an anesthetic effect leading to unconsciousness. The chief uses of barbiturates are to quiet nervous unrest, to cause sleep, to prevent epileptic convulsions, to counteract the effect of convulsive poisons such as strychnine, and for surgical anesthesia. These drugs are usually administered in tablet and capsule form in sedative or hypnotic doses, but solutions are available for intravenous use.

The toxic effects of barbiturates vary from one individual to another. Idiosyncrasy to the drug is frequent and manifested in dizziness and fever or in the development of a skin eruption. These drugs are dangerous to individuals suffering from damage of the liver or kidneys. Five to ten times the ordinary dose has been found to cause severe poisoning. The full effect may not take place for days, but then again, the action may occur within a few minutes. Long continued use of short-acting barbiturates may lead to addiction. These drugs are hypnotics and not analgesics so that their presence alone where there is severe pain may often cause delirium.

The barbiturates are synergistic by increasing the effectiveness of other substances, notably the analgesics, aspirin and the like, and alcohol. A physician will avoid administering a barbiturate to one who is obviously under the influence of alcohol. Bronchopneumonia is a common development of barbiturate poisoning. Some victims give the appearance of being drunk due to an unsteadiness of gait, a toxic symptom.

As a preventive to accidental and suicidal poisoning, a suggestion has been strongly advocated, namely, to combine barbiturates with an emetic in such proportions that only when a lethal dose is reached will the emetic become effective. Zinc sulfate has been found highly suitable for this purpose.

Sodium pentothal and Sodium Amytal have received attention as “truth serums” and were first employed in psychotherapy during World War II during the treatment of what was known as combat fatigue. This application is based on the assumption that memory of very recent things is abolished under narcosis and the patient may be induced to speak of matters that may be the real cause of his difficulty.

The threat of addiction is a serious cloud over the bright horizon of the high value of these drugs. Prolonged consumption leads to physical dependence. Although it is the opinion of most authorities that only psychopathic individuals whose personalities are maladjusted are apt to become addicted to their use, the recognition of this does not remove its danger. Dr. Harris Isbell, chief of research of the federal narcotic hospital in Lexington, Ky., considers that "the barbiturates are addiction-forming in every sense of the word … the manifestations of chronic barbiturate intoxication are, in most ways, much more serious than those of addiction to morphine … and withdrawal of morphine is much less dangerous than is withdrawal of barbiturates."

In view of these alarming facts, legislation has been enacted in the form of the Durham-Humphrey amendment to the Federal Food and Drug and Cosmetic Act which provides safeguards against the illegitimate distribution and sale of barbiturates in interstate commerce and it specifically prohibits pharmacists from selling them over the counter. A legislative proposal has been made to extend these safeguards by requiring licensing or registration for physicians who prescribe or dispense these drugs.

BARBITURATES

Symptoms: Mental confusion, Drowsiness, Sleep, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give *a* Stimulant such as Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

BARIUM COMPOUNDS, SOLUBLE

Symptoms: Vomiting, Cramps, Paralysis of arms and legs.

Antidote and First Aid Treatment:

1. Give Magnesium Sulfate as an antidote (See No. 17).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent such as Gum Arabic (See No. 8).
4. Give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

BELLADONNA

Belladonna or deadly nightshade, grows in shady places, along walls and amidst rubbish. Its flowers are large, bellshaped and brownish-purple in color with berry-like fruit of deep purple to black. But its beauty and modest habitat is only a lure to the unsuspecting for every part of the belladonna plant is virulent. The violet-colored juice of the berries is pleasantly sweetish in taste and children are often attracted by the fine color and taste to pick and eat them with disastrous results.

Belladonna, native to the countries of southern Europe, is extensively cultivated in the United States for medicinal purposes. The activity of this drug is due to the extremely poisonous alkaloid atropine. It occurs in the form of its isomer hyoscyamine from which it emerges as atropine during the process of extraction.

The *Grand Herbier*, printed in Paris about 1504, makes the earliest mention of belladonna. Its poisonous properties were later recognized by Leonard Fuchs in his *Historia Stirpium* printed in 1542. The drug was commonly used at that time by Italian women for cosmetic purposes and its property of enlarging the pupils of the eyes was thought by them to add to their beauty. Having been commonly referred to as Herba Bella donne it thus acquired its name.

The discovery of its alkaloid atropine in 1833 when it was first prepared by Mein, firmly established its use in medicine. Belladonna preparations are made largely for local application. Its leaves are sometimes used in the form of a cigarette and when burned, the smoke is found to relieve asthmatic paroxysms. But the most extensive use of atropine in medicine is as a remedy in ophthalmology in which it is held in the highest esteem. It is applied both to dilate the pupil of the eye and to paralyze the muscles of accommodation. Other uses are to diminish secretions in the entire respiratory tract in pre-anesthetic medication and as a circulatory stimulant.

Atropine stimulates at first but then depresses the central nervous system, and it also paralyzes the peripheral parasympathetic nerve endings. The symptoms of atropine poisoning have often been mistaken for delirium tremens, acute mania, and even drunkenness because these are often exhibited by a feeling of exaltation, great excitement, becoming talkative and quarrelsome, delirium, convulsions and final coma.

BELLADONNA CONTAINING COMPOUNDS

Symptoms: Dryness in mouth, Pupils dilated, Paralysis of arms and legs, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN!

BENZEDRINE

Symptoms: Restlessness, Insomnia, Panic, Chills, Sweating, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

BENZENE

Symptoms: Headache, Dizziness, Weakness.

Antidote and First Aid Treatment:

If Overcome by Inhalation:

1. Remove the victim to fresh air. Administer Artificial Respiration.

If Taken Internally:

1. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

BENZENE HEXACHLORIDE

Possible Cause of Poisoning: This is used as an insecticidal stomach and contact poison. The gamma isomer is most toxic.

Warning: This chemical, its vapor, or its dust is dangerous when inhaled, swallowed, or when it enters the eyes.

Symptoms: Tremors, Convulsions, Prostration.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Should this poison get on skin or into the eyes: Remove by thorough washing.

If Swallowed:

1. Administer an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN!

BETANAPHTHOL CONTAINING COMPOUNDS

Symptoms: Nausea and vomiting, Pain in stomach, Urine dark, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

BILE SALTS

Symptoms: Twitching, Sweating.

Antidote and First Aid Treatment:

1. Universal Antidote should be given (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

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BISMUTH CONTAINING COMPOUNDS

Symptoms: Nausea, Vomiting, Excess Saliva, Throat may swell.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. The victim should take large quantities of water.

CALL A PHYSICIAN!

BORIC ACID AND BORATES

Symptoms: Vomiting, Diarrhea, Abdominal pain, Dermatitis, Muscle spasms, Shock.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).

2. Give an Emetic such as mustard (See No. 1).

Possible Cause of Poisoning: These are used in soap, washing compounds, soldering compounds, in preservation of wood, in the control of mold growth, fleece-worm, and black blowfly, in combination with sodium fluoride in cockroach bait.

CALL A PHYSICIAN!

BROMIDES

Symptoms: Depression, Giddiness, Delirium.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give large quantities of water.

CALL A PHYSICIAN!

BROMINE

Symptoms: If Bromine was inhaled: Pain and irritation in nostrils, throat and lungs.
If Bromine was taken internally: Pain in mouth, throat, and stomach.

Antidote and First Aid Treatment:

1. If victim is overcome by the gas: Remove him to fresh air and have him inhale Aromatic Spirit of Ammonia.
2. If Bromine was taken internally: Give Universal Anti-dote (See No. 21).
3. Give an Emetic such as mustard (See No. 1).
4. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

C

CADMIUM SALTS

Possible Cause of Poisoning: These are used as photographic agents, in cadmium galvanoplating, and in pyrotechnics.

Symptoms: Headache, Throat dry, Vomiting, Tightness in chest.

Antidote and First Aid Treatment:

1. Give 1 to 2 tablespoonfuls of Milk of Magnesia as a chemical antidote.
2. If vomiting has not occurred, give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).
4. If a stimulant is needed, give Aromatic Spirit of Ammonia or strong cool coffee or tea (See No. 19).

CALL A PHYSICIAN!

CAFFEINE

Symptoms: Nausea, Vomiting, Insomnia, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

CAMPHOR

Symptoms: Pain in throat and stomach, Vomiting, Dizziness, Weakness

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give the victim a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

CANNABIS

Symptoms: Pleasurable intoxication, Drowsiness, Sexual desire may be increased, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give large quantities of water.

CALL A PHYSICIAN!

CANTHARIDES

Symptoms: Burning sensation in mouth, Vomiting, Pain in stomach, Chills, Collapse.

Caution: Do Not Give Any Fatty Substances Until Advised by Physician.

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).
2. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

CARBON DIOXIDE

Symptoms: Respiration failure, Unconscious.

Antidote and First Aid Treatment:

1. Remove the victim into fresh air and administer Artificial Respiration.
2. Give a stimulant such as Aromatic Spirit of Ammonia (See No. 19).
3. Keep him quiet and warm.

CALL A PHYSICIAN!

CARBON DISULFIDE

Possible Cause of Poisoning: This is used in paint and varnish removers, rubber cement, germicides, moth exterminator, vermin killer, as cold vulcanizing agent, rubber wax solvent, and oil and fat solvent.

Symptoms: Giddiness, Vomiting, Paralysis.

Caution: Poisonous When Inhaled or Swallowed.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air immediately.
2. Artificial Respiration may be necessary.

If Swallowed:

1. Give ½ cupful of medicinal mineral oil.
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. If stimulant is needed, give Aromatic Spirit of Ammonia, or tea or coffee (See No. 19).

CALL A PHYSICIAN!

CARBON MONOXIDE

Symptoms: Giddiness, Headache, Temple throbbing, Vomiting, Unconsciousness.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Give Artificial Respiration.

CALL A PHYSICIAN!

CARBON TETRACHLORIDE

Symptoms: Dizziness, Nausea, Vomiting, Fever, Coma.

Antidote and First Aid Treatment:

1. If poisoning is due to inhalation: Remove to fresh air.
2. Administer Artificial Respiration.
3. Give Aromatic Spirit of Ammonia (See No. 19).

If Taken Internally:

1. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

CHENOPODIUM

Symptoms: Nausea, Vomiting, Ringing in the ears, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

CHLORAL HYDRATE

Chloral hydrate is a narcotic drug with an unsavory reputation acquired from the underworld where it is commonly known as a Mickey Finn or Knockout Drops. Added to a drink, its lethal dose gives satisfaction in about fifteen minutes with, first, a feeling of drowsiness, then passing out shortly, and death following due to heart failure.

Chloral hydrate, one of the oldest of the hypnotic drugs, has been displaced by newer preparations despite its excellence. One of the four synthetic compounds first to be admitted to the U. S. Pharmacopoeia, it was originally discovered by Liebig in 1832. Drawing from the fact that chloral hydrate can be easily converted to chloroform, Otto Liebreich in 1869, reasoned that chloral should change in the body to chloroform and behave as a hypnotic and anesthetic. This hypothesis failed in proof, but it did bring to light the narcotic nature of chloral hydrate.

This drug occurs as colorless, transparent or white crystals and gives off an aromatic, penetrating odor, slowly volatilizing in the air. It is one of the most certain of the hypnotics in present use but is not as widely appreciated as it deserves. Reasons for this fall in popular esteem may well be sought in the facts that the barbiturates are preferred for their greater facility of use, chloral's irritating action on the skin and mucous membranes which makes it rather disagreeable to take, requiring it to be well diluted and a flavoring agent is essential to make it palatable.

Chloral hydrate in the body acts by depressing the central nervous system. In small doses it produces a feeling of weariness and induces a quiet sleep in which the pulse and the respiration are slowed in the same manner as in normal sleep. Since the reflexes are not abolished, a person can easily be awakened. With large doses, there may be immediate collapse with deep coma, almost an imperceptible pulse, and sudden cardiac or respiratory failure.

CHLORAL HYDRATE

Symptoms: Tired feeling, Drowsiness, Sleep.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a stimulant such as strong coffee or tea or Aromatic Spirit of Ammonia (See No. 19).
4. Keep the victim quiet and warm.

CALL A PHYSICIAN!

CHLORATES

Symptoms: Nausea, Vomiting, Pain in Stomach, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give mustard as an Emetic (See No. 1).
3. When vomiting ceases, Give a Demulcent drink such as Gum Arabic (See No. 8).
4. If a stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

CHLORDANE

Possible Cause of Poisoning: This is used as an insecticide. Food and crops may be contaminated.

Caution: This is toxic when swallowed or when absorbed through the skin.

Symptoms: Giddiness, Headache, Nausea, Vomiting, Abdominal pain, Diarrhea, Salivation, Sweating, Disturbed vision, Mental confusion, Tightness in chest, Convulsions, Paralysis, Coma.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Remove from skin or eyes by washing with soap and water.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. If a stimulant is needed, give Aromatic Spirit of Ammonia, or strong tea or coffee (See No. 19).

CALL A PHYSICIAN!

CHLORINE GAS

Symptoms: Breathing difficult, Feeling of tightness in chest, Pulse weak.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Have the victim breathe in the vapors of Aromatic Spirit of Ammonia.
3. Give a Demulcent drink such as Gum Arabic. White of eggs or milk may also be given (See No. 8).

CALL A PHYSICIAN!

CHLORINE WATER

Symptoms: Burning sensation in throat and stomach, Vomiting, Breathing difficult.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

3. Give a Demulcent drink such as milk, white of eggs, or a bland oil such as mineral oil, ½ to ¾ glassful.

External Treatment:

Symptoms: Skin or mucous membrane is raw and inflamed.

Antidote and First Aid Treatment:

1. Wash surfaces with water.
2. Apply a paste of Milk of Magnesia Powder and water.

CALL A PHYSICIAN!

CHLOROPICRIN

Possible Cause of Poisoning: It is used as a fumigant for grain.

Symptoms: Irritation of the eyes and respiratory tract, Shock, Death may occur from asphyxiation.

Caution: Very Toxic When Inhaled or Swallowed.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air immediately.
2. Artificial Respiration may be necessary.
3. Keep victim warm and quiet and have him lie down.

If Swallowed:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. If a stimulant is needed, give coffee or tea, or Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

CINCHONA

Cinchona was brought to the world's attention through the Spanish conquerors of South America in the sixteenth century. The magnitude of this discovery can be seen in its immeasurable contribution to world progress by affording a means of combating the dreaded malarial fever, and thereby opening up areas of the globe formerly valueless to man.

Cinchona is the generic name of a number of evergreen trees which belong to the botanical Rubiaceae family. These trees are indigenous to the eastern slopes of the Andes between latitudes 10°N and 20°S where they find the ideal in temperature and moisture for their growth. The genus Cinchona which includes trees of varying sizes in which some reach a height of 80 feet, was established by Linnaeus in 1742 and at the same time giving it its name.

The stories concerning the introduction and spread of Cinchona throughout Europe, is shrouded in legend. One story has persisted with so much vigor that it has become wholly acceptable. The Corregidor of the province of Loxa in southern Peru, came down with malarial fever in 1630, and was cured with cinchona bark. Whether he was treated by a native medicine man or by a Jesuit priest is in the realm of speculation. Eight years later, the Countess of Chinchon, wife of the governor of Peru, became ill from malarial fever and upon the recommendation of the Corregidor, was cured with cinchona. When she returned to Spain, she brought with her a supply of the cinchona bark which bears her name. The Jesuit missionaries in Peru took a great interest in this drug and succeeded in monopolizing its distribution for many years. It appeared for the first time, in the London Pharmacopoeia in 1677.

The demand for the drug was so great after its introduction into Europe, that the tree faced the prospect of total extinction due to faulty methods of collecting its bark. Concern for insured supplies stimulated several governments to establish plantations in other parts of the tropics. The earliest cinchona plantation was in Java. Others were planted in India, Ceylon, Jamaica, and Australia. Before World War II, the Island of Java produced 90 per cent of the world's supply of cinchona. When the Japanese in 1942 invaded the Dutch East Indies and cut off that source of supply, the United

States revived the cinchona bark industry in the South American Andean republics. As a result of the exigencies of war, a portable quinine extraction device was developed and used directly in the field, providing a valuable aid in the economy of manufacture.

Quinine, the most active alkaloid in cinchona, was isolated in 1792. About twenty other alkaloids were isolated later, but of these only four and their salts are officially recognized for their value, quinine, quinidine, cinchonine, and cinchonidine. These alkaloids act on the trophozoite or erythrocytic form of the malarial parasite. Quinine is most often used for this purpose. Other ailments to which it is applied, are in the relief of pain in influenza, neuralgia, and headache. Being a very bitter substance, it has been employed to stimulate the appetite. It is a common remedy for colds, and is even found in hair tonic.

The symptoms arising from toxic doses of quinine, are a ringing in the ears, dizziness, and pain in the head. The effect on the blood pressure can be dangerous and even death has ensued.

CINCHOPHEN

Symptoms: Nausea, Vomiting, Diarrhea, Fever.

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

COCAINE

Symptoms: Restlessness, Pupils dilated, Vomiting, Convulsions, Delirium.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

3. If a stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

COLCHICINE

Symptoms: Vomiting, Salivation, Diarrhea, Gastric pain, Convulsion, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give as a Stimulant, Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

CONIUM

Symptoms: Dizziness, Breathing difficult, Creeping paralysis, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. If a stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

COPPER CONTAINING COMPOUNDS

Symptoms: Vomiting, Diarrhea, Stools are green in color, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic. Whites of egg may also be given (See No. 8).

CALL A PHYSICIAN!

COTTON ROOT PREPARATIONS

Symptoms: Headache, Nausea, Drowsiness, Weakness.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. If a stimulant is needed, give Aromatic Spirit of Ammonia or tea or coffee (See No. 18 or No. 19).
4. Keep the victim warm and quiet.

CALL A PHYSICIAN!

CROTON OIL (OLEUM TIGLII)

Symptoms: Pains in stomach, Violent purging, Exhaustion, Collapse.

Caution: No Oily Substance Should be Given.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia or Tea or Coffee (See No. 18 or No. 19).
4. A Demulcent drink may also be given such as Gum Arabic (See No. 8).

CURARE

Interest in curare has been rekindled in recent years. This drug, which is the oldest and best-known muscle relaxant, is now being more carefully studied and more fully explored in recognition of its unique and valuable properties. For some time, curare has had a reputation for unreliability due to its variable strength and composition, and consequently its use as a drug was inconstant.

In 1940, Gill obtained authentic specimens of the curare plant from its native source and identified it as Chondrodendron tomentosum which has become the commercial source of our present supply of this drug. Within the last ten years, the active alkaloid of curare, tubocurarine, has been isolated and at last a physiologically standardized product has been made available. Other curare alkaloids have since appeared and several drugs possessing curarelike activity have received attention, opening the way for wider clinical application.

Curare, a South American Indian word meaning “poison”, aptly describes the deadliness of a number of secret preparations employed as arrow poisons by the natives of the Orinoco and Amazon valleys. The formidable nature of this weapon is to be seen in its peculiar behavior when a curaretipped arrow finds its victim. This violent poison attacks the motor nerve ends of the voluntary muscles paralyzing the victim but leaving the mind clear to realize its plight.

Curare was one of the early curiosities brought back soon after the discovery of America. The Italian Antonio Pigafetta, in his travels with Magellan, Francisco Lopez the Spanish historian, and the Spanish physician Monardes, took note of and expressed a marked interest in this rare arrow poison. Sir Walter Raleigh after his voyage of discovery of Guiana in 1595, described vividly the effect of curare. “The Aroras … are very valiant, or rather desperate people, and have the most strong poison on their arrows, and most dangerous of all nations. … There was nothing whereof I was more curious than to find out the true remedies of these poisoned arrows. For besides the mortality of the wound they make, the party shot endureth the most insufferable torment in the world, and abideth a most ugly and lamentable death …"

Alexander von Humboldt (1769-1859), was the first European to witness the actual making of curare and he describes the ritualistic care with which it was compounded. A more reliable account of the origin and preparation of the drug was made by the scientist Waterton who in 1812, journeyed to South America for this purpose.

Curare, also known as curari, ourari, woorari, or worali, is for the native tribes a carefully guarded secret, differing in composition in each district. It is composed of the aqueous extractions from plants differing widely in botanical origins and some of them also contain the extracts of several different plants. The most important source of curare is the bark of several varieties of Strychnos and of Chondrodendron tomentosum.

The imported curare appeared in three forms distinguished by the kind of container in which each was packed. One variety is known as para, tube or bamboo curare because it is exported in sections of bamboo tubes. Another is pot curare which comes in small brown earthenware pots and the third is called gourd or calabash curare because it is packed in small gourds. The commercial curare is a brownish or black, shiny resinoid mass, soluble in about 75 per cent cold water.

We owe a debt to Claude Bernard, the French physiologist who in 1856 demonstrated in his classic experiments on neuromuscular transmission, the manner in which curare exerted its action. The paralysis of voluntary muscle caused by an interference of nerve impulse when it arrives at the muscle, always proceeds in a definite order. The drug is injected intravenously or intramuscularly, since it does not function when taken by mouth, and its physiologic effects are evident within one or two minutes. These are observed to be, first, a haziness or fuzziness of vision, then the muscles of the eyelids fail, loss of speech follows, the neck muscles become paralyzed, weakness is shown in the spinal muscles, and finally the muscles of the diaphragm cease to function and death occurs from respiratory failure. The action of curare is brief, usually not extending beyond 15 to 20 minutes since it is rapidly excreted and destroyed by the body. If artificial respiration can be maintained, toxic doses will pass off and permit the muscles to recover their normal tone.

Curare and curare-like drugs are gaining importance in clinical anesthesia for surgical purposes. These drugs require exacting administration however, to prevent the paralysis of the respiratory muscle. Their short action is found of great value in anesthesia. Curare is being used with success as a relaxant for mental patients and in certain neurological conditions. It is useful in conditions in which muscle spasm exists. Its applications have increased to include, recently, such conditions as sprains, hiccough, fractures, and others. The primary danger from the use of curare is paralysis of the respiratory muscle which may lead to asphyxiation. Some individuals have shown extreme hypersensitivity to this drug.

CURARE

Symptoms: Diuresis, fever, unconsciousness.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. A stimulant may be given such as Aromatic Spirit of Ammonia (See No. 8).

CALL A PHYSICIAN!

CYANIDES

Hydrocyanic acid or prussic acid, is a most violent poison, killing with an energy that takes but a brief few minutes. This is largely why it has had such a vogue among criminal poisoners. While its salts are less virulent, they are far more handy when carried in small vials for use in suicide. Hydrocyanic acid is acquired as a by product in the hydrolysis of cyanogenetic glycosides. These glycosides are active principles found in many plants widely distributed in nature. When these plants find their way into the body, and as they pass through the digestive tract, they are likely to liberate hydrocyanic acid by the action of the digestive enzymes in the alimentary canal of either man or animal.

The best known source of hydrocyanic acid is the bitter almond containing the glycoside amygdalin. The possibility of poisoning does not rest solely in its accidental ingestion. Being highly volatile, it enters the body through the skin and for this reason presents its greatest risks in industrial applications.

It is employed extensively as a fumigant in ships, buildings, and for the spraying of citrus trees. Other industries where it finds application, are dyestuff works, tanneries, fertilizer plants, in gold mining and gilding, and others.

The cyanides are quickly absorbed and they act as general protoplasmic poisons. For a fleeting moment, they stimulate the central nervous system, and then severe depression follows. When a fatal dose is taken, the effect is so rapid that the symptoms are negligible. But when death comes more slowly, the usual symptoms are dizziness, violent gasping for breath, convulsions and then coma.

The notorious Rasputin met his end most dramatically by cyanide poisoning as told in the story by Prince Youssoupoff and found in his book "Rasputin: His Malignant Influence and Assassination." The prince and his friends invited Rasputin to tea having decided beforehand to rid Russia of "her most dangerous internal enemy". The wine and cakes were heavily poisoned with potassium cyanide and, as the story goes, Rasputin ate and drank considerable quantities. The power and strength of the man was amazing for he showed no effect of poisoning even after two hours had passed. The prince finally saw no alternative but to shoot him.

CYANIDES

Possible Cause of Poisoning: These are used as fumigants.

Caution: Poisonous When Inhaled or Swallowed. Immediate Treatment is Absolutely Necessary.

Symptoms: Headache, Vomiting, Dizziness, Respiratory failure, Convulsions, Coma, Death may be very rapid.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Break an Amyl Nitrite Pearl and hold near the victim's nose for 15 seconds. Repeat this procedure 5 times more.
3. Artificial respiration may be necessary.

If Swallowed:

1. If the victim is unconscious, break an ampule of Amyl Nitrite and hold it near his nose for 15 seconds. Repeat until consciousness returns.
2. If the victim is conscious, give 2 to 3 tablespoonfuls of Hydrogen Peroxide Solution (3%).
3. Give an emetic such as Sodium Chloride (See No. 2).
4. If a stimulant is needed, apply a pearl of Amyl Nitrite.
5. If breathing stops, apply artificial respiration.

CALL A PHYSICIAN IMMEDIATELY!

D

DDT
DICHLORODIPHENYLTRICHLOROETHANE

Possible Cause of Poisoning: As an insecticide it is used as a contact and stomach poison. It has been found on fruit and vegetables and in the milk of cows.

Caution: It is toxic when swallowed or when absorbed through the skin.

Symptoms: Nausea, Vomiting, Headache, Numbness, Mild convulsions, Induces paralysis, Affects the bronchial tubes.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. If skin or eyes have been in contact with it: Wash well with water.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a cathartic such as Magnesium Sulfate (See No. 17).
4. If a Stimulant is needed, give Aromatic Spirit of Ammonia or strong tea or coffee (See No. 19).

CALL A PHYSICIAN!

DICHLOROETHYL ETHER

Possible Cause of Poisoning: It is used as a paint and varnish remover, as a wetting out agent, and solvent for oils, fats, and waxes.

Symptoms: Nausea, Irritation of the respiratory organs.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Artificial Respiration may be required.
3. If a Stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. If a Stimulant is needed, give hot tea or coffee, or Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

2,4-D 2,4-DICHLOROPHENOXYACETIC ACID AND AMINE SALTS, INORGANIC SALTS, AND ESTERS OF THIS ACID

Possible Cause of Poisoning: This is a herbicide.

Symptoms: Nausea, Vomiting, Abdominal pain, Diarrhea.

Antidote and First Aid Treatment:

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

Caution: Inhalation of its dust or when swallowed, is dangerous. Avoid contact with eyes, skin, or by inhalation.

CALL A PHYSICIAN!

DIGITALIS

Digitalis (Digitalis purpurea) is a highly poisonous plant deceptive in the innocence and beauty of its spikes of purple or white flowers. Growing natively in the woods and gardens of southern and central Europe, it was regarded in folk-lore as the special flower of the fairies where the tiny elves found a ready hiding place in the little bells of the flower. The plant is known by a variety of names: foxglove, lady's glove, fairy cap, goblin's gloves, fingers, thimbles, or bells.

Although foxglove has been used as a remedy by the British as far back as the tenth century, the earliest mention of it is in the "Herbal" of Fuchs in 1542, who gave it its present name from digitale meaning thimble or finger stall.

The London Pharmacopoeia of 1650 described powders and salves of digitalis but its use seemed to have died out until Dr. William Withering of Birmingham wrote his pamphlet in 1785 "An Account of the Foxglove and Some of Its Medical Uses" which reawakened interest in the drug. He acquired his knowledge of the value of digitalis from a secret remedy given to him by an old Shropshire woman. This old family recipe was used in the treatment of dropsy but Withering was first to recognize its value in reducing the heart's action.

Since the crude drug and its preparations vary considerably in activity, often losing variable amounts of their activity on curing and aging, efforts were made to isolate the pure active principles. These were found to be the glycosides digitoxin, gitoxin and gitalin present in the leaves of Digitalis purpurea. Other plants and the poisons of toads have also been found to contain glycosides similar to these both in chemical structure and in their action in the body. Digitoxin, the most important of these glycosides and more highly poisonous, was first isolated by Nativelle in 1869. But it was little understood both chemically and pharmacologically until the work of Cloetta in 1920.

All the preparations of the drug and its isolated principles and mixtures of these, act directly on the heart muscle. In diseased hearts they slow the rate of heartbeat, cause the heart to empty more completely, and thus increase the output.

Digitalis poisoning has been reported to be more frequent in recent years. With more generally active and more stable commercial preparations available to the physician, he is sometimes not fully aware of their potency. The symptoms of digitalis poisoning are nausea and vomiting, abdominal discomfort or pain. Diarrhea may also occur.

DIGITALIS CONTAINING COMPOUNDS

Symptoms: Vomiting, Gastric pain, Dizziness, Diarrhea.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Artificial Respiration may be needed.

CALL A PHYSICIAN!

DINITRO ORTHO CRESOL

Possible Cause of Poisoning: It is used as a dye, and as a poisonous insecticide.

Caution: Toxic when inhaled. It may be fatal if swallowed. Irritating to eyes and skin.

Symptoms: Burning in throat, Shock may develop, Respiratory failure.

Antidote and First Aid Treatment:

If Swallowed:

1. Dissolve a teaspoonful of Sodium Bicarbonate (baking soda) in a glassful of warm water and have the victim swallow this slowly. Repeat this procedure until vomiting occurs.
2. Give an Emetic such as Sodium Chloride (See No. 2).

If the Poison is on Skin or in Eyes:

1. Wash well with water.

CALL A PHYSICIAN!

E

ECONOMIC POISIONS (PESTICIDES)

The comprehensive terms pesticides or economic poisons, cover all the groups of substances now known and used in the unrelenting war on man's ubiquitous enemies. These include insecticides, fungicides, herbicides (weed killers), rodenticides, and ascaricides. The records of history give abundant evidence of the malevolent aggression of these pests, so tireless in their affliction of man and beast. The bible frequently refers to the ravages of locusts and the terrors of plague. Literature is full of descriptions of the horrors of disease and plague. No less terrifying are the tropical fevers which for ages have ravaged man. Thanks to the development of pesticides, many of these diseases have been conquered and some have even faded into the shades of history.

The benefits of economic poisons to public health and wealth are vast and spectacular. Fertile areas once uninhabitable due to the prevalence of fever bearing insects, notably the Pontine Marshes in Italy, are now thriving agricultural communities. Insecticides have improved food crops and increased their size with the attendant improvement of nutrition, general health and increased economy.

Prior to 1860, only occasional references were made in scientific literature to the use of chemicals for insect control. The older insecticides were made largely from plant materials such as Cedarwood, Citronella, Derris, Larkspur, Pyrethrum, Sabadilla, and Tobacco of which few are now employed for this purpose. Since 1940, insecticides have been evolved with a rare speed and abundance.

They are conveniently classified into two main groups, the chlorinated hydrocarbons, and the organic phosphorus compounds. Some members of the halogenated hydrocarbons are DDT, methoxychlor, Benzene, hexachloride, chlordane, aldrin, dieldrin, heptachor, toxaphene, and Dilan. The better known phosphorus compounds are parathion, EPN, malathion, Diazinon, and Bayer compound.

The blessings derived from these substances are not without their attendant evils. Being highly poisonous, they require the utmost care in their manufacture, in following proper instructions for their use, and taking necessary precautions during their application.

Acute poisoning usually occurs after inhalation or when contact with the skin has been made during exposure to manufacturing, packaging, handling or spraying of insecticides, and when harvesting fruits and vegetables which still contain some of the sprayed chemical. These poison by means of their action on the autonomic nervous system. By blocking the action of the enzyme known as cholinesterase, an accumulation of acetylcholine takes place which stimulates and then later paralyzes all nerve synapses and motor nerve endings.

Some of the symptoms are dizziness, headache, vomiting, abdominal pain, diarrhea, sweating, disturbed vision, mental confusion, convulsions, and coma.

ERGOT CONTAINING COMPOUNDS

Symptoms: Vomiting, Pain in abdomen, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Keep the victim warm and quiet.
4. Artificial Respiration may be needed.

CALL A PHYSICIAN!

ETHER

Symptoms: Slow breathing, Pupils are dilated, Respiratory failure.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Give Artificial Respiration.

If Swallowed:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

ETHYL ALCOHOL

Ethyl alcohol is a physical poison that can evoke dramatic examples of functional disturbances. But rarely is one acutely poisoned by excess drinking of alcohol. To speak of alcohol poisoning is to embrace not only its physical aspects, but also the psychological, social, and economic factors that are inseparably part of its destruction. Authorities are all agreed that alcohol alone is not the cause of alcoholism. It is rather an expression of a disordered personality. A persistent need for alcohol is an admission of emotional pressures that are seeking for an outward relief.

Fermentation, a natural phenomenon, and probably known long before recorded history, has served to provide man with some kind of alcoholic beverage. The fermentation of fruit juices, the sap of certain trees, and vegetable and animal substances offer abundant natural sources of alcohol. The process of fermentation is due to the action on the sugar present, of a tiny yeast plant that is placed in the liquid from the air. The yeast multiplies rapidly and through the action of its enzyme changes the sugar into carbon dioxide and alcohol. Fermentation ceases when an alcoholic content of 14 per cent is reached. Even the brewing of beer is very old since the process has been traced almost to the beginnings of agriculture and involves the fermentation of grain with malt added for flavor. These fermented beverages having their origin in nature, were considered good and were frequently the basis of tribal rites which led to their use as a firmly established custom.

Fermented juices of fruits better known as wines, are relatively low in alcoholic concentration. This is equally true of brewed beverages. But with the advent of distillation, these beverages could be made several times stronger than the strongest wines. The process of distillation is very old having been used in the Orient perhaps before the Christian era. It first appeared in Europe about the eleventh or twelfth century but not before the sixteenth century did distilled liquor become more easily available. Wines and beer were a boon to the Europeans who found their piquant flavor a welcome relief from the monotony and poor flavor of their accustomed dried and smoked meats and vegetables and above all, they enjoyed the sensations of well being with the elimination of fatigue which they seemed to provide.

The Bible contains frequent endorsements of the use of wine and counts it as a gift of God and therefore good. But it also recognized how easily the use of alcohol can be abused and points to the tragic consequences of such abuse. It urges moderation particularly among men of social responsibility. “It is not for kings O Lemuel, it is not for kings to drink wine; nor for princes strong drink. Lest they drink, and forget the law, and prevent the judgment of any of the afflicted. Give strong drink unto him that is ready to perish and wine unto those that be of heavy hearts. Let him drink, and forget his poverty, and remember his misery no more.” (Rom. 14:21).

The thirst for brewed, fermented and distilled beverages so commonly displayed over the centuries is attributed primarily to the alcoholic content of the drink and its effect on the drinker. Alcohol does not affect the individual until after it is absorbed from the digestive tract into the blood stream. Some part is absorbed from the stomach wall but the largest part enters the blood stream from the small intestines. The rate of absorption must take into account such factors as the nature of the drink, its alcoholic percentage, how quickly it is drunk, and whether food is present in the stomach. When alcohol reaches an empty stomach, the absorption through its walls is more direct and rapid and from 30 to 40 percent is absorbed. From 80 to 90 per cent of the alcohol is destroyed by the process of oxidation which starts in the liver and proceeds at an approximately constant rate. Since the rate of absorption is often more rapid than oxidation, the concentration of alcohol accumulates both in the blood and in the brain. With sufficiently high concentration the symptoms of intoxication and stupor and finally coma are produced. It has been determined that behavior is not affected when the concentration in the blood reaches up to 0.05 per cent but behavior begins to be affected at this concentration. Obvious and measurable effects on behavior occur when an alcoholic concentration of 0.15 per cent is reached as shown by uncoordinated movements and speech. Stupor occurs with a concentration of 0.4 per cent and at a concentration of 0.5 per cent the victim faces possible death due to deep anesthesia.

Alcohol has been classified as an anesthetic because at specific dosages, its behavior is so much like the sedative, analgesic and hypnotic drugs. Like these drugs, alcohol in different concentrations, affects the central nervous system in a progressive depressant action. As the concentrations of alcohol rise in the blood, the first symptoms are a disturbance of the higher intellectual functions such as judgment, discrimination, and the inhibitions. Further depression causes muscular coordination and speech to become uncertain and with the depression of the lower brain centers, stupor is finally reached and drinking is most likely discontinued at this point. Meanwhile oxidation goes on and by the continuous process of lowering the concentration, the normal functions of the central nervous system are restored in ascending order.

The physiological habituation of alcohol has been likened to the addiction of narcotics. This has been disputed since a physical tolerance for alcohol does not occur. The concentrations in the blood produce the same effects on the nervous system at the beginning as in the more advanced stages of alcoholism.

The use of alcohol as a medicine has declined seriously in recent years as its action is better understood and many of its imagined powers are clearly recognized for what they are. It was thought to be a stimulant because of its action on the nerve endings of the throat and esophagus. Smelling salts is found to work equally as well as brandy for the purpose of reviving persons who have fainted or are in shock. The value of alcohol in snake bite is entirely discounted, and its only value in disorders of the circulatory system is as a sedative where it will help to relieve pain and reduce nervousness and fear. Alcohol in small amounts is often prescribed for elderly people for whom it provides a mild sensation of warmth and where there is the assurance that such users will not become excessive drinkers.

ALCOHOLS

ETHYL ALCOHOL ISOPROPYL ALCOHOL PROPYL ALCOHOL

Possible Cause of Poisoning: These are widely used in industry, ethyl alcohol is used in the form of beverages, and these are also used for medicinal purposes.

Symptoms: Variable from happiness to being quarrelsome, Vomiting, Coma.

Antidote and First Aid Treatment:

1. If vomiting has not begun, give an Emetic such as mustard (See No. 1).
2. Give strong tea or coffee.

CALL A PHYSICIAN IMMEDIATELY!

ETHYLENE DIBROMIDE

Possible Cause of Poisoning: This is used in organic synthesis and as a solvent in celluloid manufacture.

Caution: Poisonous when swallowed or inhaled. Irritating to the skin.

Symptoms: Nausea, Headache, Dizziness, Irritation of respiratory tract, May lead to circulatory failure.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air
2. Artificial Respiration may be required.

3. If a Stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. If a Stimulant is needed, give hot tea, coffee, or Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

F

“FERMATE”
FERRIC DIMETHYL DITHIOCARBMATE

Possible Cause of Poisoning: This is used as a fungicide.

Caution: Its vapors are irritating to the breathing apparatus, eyes and skin.

Symptoms: Nausea, Vomiting, Slow heart **beat.**

Antidote and First Aid Treatment:

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN!

FISH POISONING

Possible Cause of Poisoning: Eating contaminated fish products.

Symptoms: Respiratory difficulties, Dilated pupils, Vomiting, Excessive saliva, Convulsions.

Antidote and First Aid Treatment:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Give an Enema (See No. 22).
3. Apply external heat.
4. Artificial Respiration may be needed.

5. If a Stimulant is needed, give Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN IMMEDIATELY!

FLUORIDE CONTAINING COMPOUNDS

Possible Cause of Poisoning: These are used as insecticides and rodenticides.

Caution: Very toxic. Speed is essential in rendering first aid.

Symptoms: Vomiting, Cramp-like pains in abdomen, Weak pulse, Convulsions

Antidote and First Aid Treatment:

1. Give Milk of Magnesia (See No. 14).
2. Give an Emetic such as mustard (See No. 1).
3. Artificial Respiration may be necessary.
4. Give a Demulcent drink such as Gum Arabic or milk or white of eggs (See No. 8).

CALL A PHYSICIAN!

FOOD POISONING

Symptoms: Vomiting, Dizziness, Diarrhea, Fever, Weakness, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Magnesium Sulfate as a Cathartic (See No. 17).
4. Give Aromatic Spirit of Ammonia as a Stimulant (See No. 19).

5. Give an Enema (See No. 22).
6. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

FORMALDEHYDE SOLUTION

Possible Cause of Poisoning: It is used in synthetic resins, embalming, as a disinfectant, deodorant, fungicide, and larvacide.

Caution: Irritating to the nose, throat, eyes, and skin.

Symptoms: Vomiting, Burning sensation in stomach, Collapse.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove victim to fresh air.
2. Artificial Respiration may be needed.
3. Wash the eyes well.

If Swallowed:

1. Give Aromatic Spirit of Ammonia (See No. 19).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN IMMEDIATELY!

G

GASOLINE

Symptoms: Giddiness, Vomiting, Vision impaired, Gasping or Choking for breath, Fever, Excitement, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Artificial Respiration may be required.
3. Keep victim warm and quiet.

CALL A PHYSICIAN!

H

HAIR WAVING PREPARATIONS

Possible Cause of Poisoning: The most popular of hair waving preparations is the salts of thioglycolic acid and the most recent newcomer is thioglycerol.°

Symptoms: Produce local and systemic toxic effects. Although poisoning is acute, recovery is rapid.

Antidote and First Aid Treatment:

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN!

HEXYLRESORCINOL

Symptoms: Irritation to mouth, throat, and stomach, Severe gastrointestinal irritation, May injure heart and liver.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

HISTAMINE

Symptoms: Vomiting, Diarrhea, Slight fever, Headache, Asthma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

HYDROGEN PEROXIDE

Symptoms: Nausea, Vomiting, Paleness.

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).
2. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

HYDROGEN SULFIDE

Symptoms: Headache, Nausea, Cramp, Coma.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Give Artificial Respiration.

CALL A PHYSICIAN!

[°] Health Aspects of Common Chemicals Used in Hair-waving Preparations. Lehman, A. J., M.D., J. Am. Med. Assoc., vol. 141, p. 84-2845, Nov. 1949.

I

INSECTS

The number of insects on earth has been likened to the stars. In either place counting has not ceased. Although more than 800,000 kinds of insects have been identified, countless numbers are waiting to be recognized. It is fortunate for man's survival that all insects are not his enemies. Indeed, many are his friends. It is true that insect pests destroy his crops and upset his economy, but others pollinate his orchards and plants, give him honey, provide natural silk and shellac. Many insects are in our service by preying on other insects far more destructive.

All insects whether enemy or friend, appear in an infinite variety of forms. In no other branch of the animal kingdom has nature given such scope to her imagination in fashioning the extremes of color, shape and size.

Harmful insects are exceedingly damaging to the health and well-being of man and animal alike. The home is ceaselessly invaded by flies, fleas, lice, cockroaches, bedbugs, etc. Neither is the outdoors a refuge from insidious invasions. Enemies are in wait in the forms of the mosquito, mites, ticks, spiders, scorpions, etc.

The mosquitos of which there are almost 2,000 different kinds, are affirmed to be biological carriers of disease. Some types are disseminators of malaria, yellow fever and dengue. The warfare in the Pacific during World War II would have been a sure defeat had we no means of controlling malaria.

The common housefly regarded by many persons simply as a nuisance, has proved to be very dangerous indeed. The tiny hairs of its legs carry bacteria that may give rise to serious disease often leading to death. Diseases spread by the housefly are rabbit fever, typhoid, dysentery, tuberculosis and cholera. Flies vary in size from the tiny fruit fly to the big horse fly and the bite of some of these is very painful indeed. The tsetse fly in Africa not only bites more fiercely than any other fly but is the cause of the dreaded sleeping sickness.

Soldiers are not only forced to wage war upon a human enemy. They must also contend with the troubles and torments waged by the insect world. Flies that breed in latrines disseminate a form of diarrhea. Another type known as eye gnats, cause a serious disease of the eye. The bolfly enters the skin while the tiny sandfly is unceasing in its power to annoy. The black flies bite so viciously they leave a train of irritation with most uncomfortable itching.

The flea is a wingless insect moving by strong quick jumps. Not only are they annoying to man and animal whom they injure by sucking their blood, but are the carrier of the germs of bubonic plague. The problems attendant upon flea eradication from pets and their masters do not end there. Their eggs having been laid on pets, are scattered about and after hatching the young, crawl into the cracks in floors and into bedding.

Mites are very small ticks related to the spiders and scorpions. These tiny creatures, too small to be seen with the naked eye, live part of their lives as parasites and suck the blood of animals and the juice of plants. Some mites burrow into the skin of man and animals, much more often in the horse, cattle and sheep, producing eruptions of the skin, severe itching with the formation of scabs and mange. Jiggers or red bugs, are mites one finds so troublesome in the woods, and a long wormlike mite burrows itself into hair follicles and the oil glands.

Lice are a plague to man and the plant world. Of those that attach themselves to man, three kinds exist, head, body and crab lice. Typhus fever is spread chiefly through the body louse. These were the “cooties” that caused so much torment to the soldiers of World War I. Crab lice are found in the pelvic regions, armpits and chest. The eggs of lice that infest hair, are called nits and these as well as body lice are easily transmitted from person to person.

Bees, wasps and hornets are man’s friends. Nevertheless, their sting is very painful and sometimes can end seriously since some persons are particularly vulnerable to it and death has been known to occur. These creatures do not bite unless disturbed or frightened giving rise to such phrases as “mad as a hornet” and “stir up a hornets’ nest.”

The scorpion is classed with spiders, mites and ticks. These ugly creatures found in the warm countries of the world, are feared for their dangerous and poisonous sting. Although its sting is very painful, death is not usual. It is important nevertheless, to squeeze or suck out the poison.

Few spiders with the exception of the black widow spider and the tarantulas are dangerous. Rather they can be viewed as true friends to man since they eat harmful insects. These creatures are to be found in many parts of the world and have lived on earth long before the coming of man. They vary in size and shape, the largest spiders being the tarantulas in the tropics.

All of these creatures including the bees and their cousins, are pests because they bite, sting or burrow into the skin of man. The pain they cause is attributed to the protein injected with their saliva which contains toxic and irritating materials. The dangerous spider venoms are the toxins of the black widow spider and the tarantulas. There are African and Australian species equally as virulent. The scorpion's venom is poisonous, and particularly dangerous to children. Their poison is predominantly neurotoxic in effect.

Symptoms that may occur from insect bites are eczematization, with weeping, crusting and scaling. Some produce large wheals, varying degrees of hemorrhage may appear at the site of the bite and ulceration may develop. Itching is a common symptom that may be followed by various forms of skin infection.

INSECT BITES

Symptoms: Eczematization, Large Wheals, Hemorrhage may appear.

First Aid Treatment:

1. Remove the stinger.
2. Apply a paste of sodium bicarbonate.

CALL A PHYSICIAN!

IODINE

Iodine is the most abundant element in the earth's crust and since its discovery, has been a major instrument in the advance of chemical science. It is present in various minerals, in sea water, in mineral and medicinal springs and in under-ground brines. Seaweed has the unique property of storing up in its plant structure, the iodides from sea water and when they are burned, the alkali iodides remain in the ashes. The earlier sources of iodine were from these seaweed ashes and for many years the inhabitants along the coast of France, Scotland, Japan and Asiatic Russia, enjoyed a thriving industry by harvesting the seaweed not only for its iodine, but also for potash. Since the discovery of the Chilean nitrate deposits, these have become the most important source of iodine today.

The discovery and recognition of iodine came about through the necessities of war. When the British navy blockaded France during the Napoleonic wars, her foreign supply of potassium nitrate was cut off. To meet her requirements of this strategic material needed so desperately for making gun powder, France set up her own manufacture. The French chemist Courtois who was engaged in this work in 1811, used ashes of seaweed in order to preserve his dwindling supply of potash. He observed the presence of a foreign substance which caused the copper vats to corrode. By adding sulfuric acid, he succeeded in precipitating this unknown to a black powder which when heated gave off a violet colored vapor. Three years later, the chemist Gay-Lussac acquired a sample of this new material and after careful study of its properties, established iodine as a new element and gave it the name "iodine" which is the Greek word for violet colored.

Elemental iodine is one of the most potent germicides we have at our service. The importance of iodine as an antiseptic is in its comparatively low injurious effect on animal tissues. The usual form of iodine is in its tincture and although frequently used internally, its salts are more often preferred.

Iodine is one of the most frequent causes of poisoning. The general public is far more familiar with iodine than with most other drugs and above all, it is so easily available.

Some of the symptoms of acute poisoning, are a burning and constriction of the mouth and throat, excessive thirst, vomiting which may be brown or blue if starch was in the stomach, abdominal pain, and shock may develop which is the usual cause of death.

IODINE CONTAINING PREPARATIONS

Symptoms: Metallic taste in mouth, Vomiting, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give a Demulcent drink such as Gum Arabic. Egg white or milk may also be given (See No. 8).

CALL A PHYSICIAN!

IODOFORM

Symptoms: Depression, Faintness, Headache, Stupor, Delirium.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN!

L

LEAD

Chronic lead poisoning is a subject that has engaged the attention and interest of the medical world for centuries and is still important today. Plumbism, the name given to lead poisoning, was known in Biblical times. Hippocrates described the illness as it occurred to those who worked in the smelting of lead ore.

Ancient China used lead for making coins about 2000 years before Christ. Early Egyptians were acquainted with its use for solder, for water pipes and as a glaze for pottery. The Romans who called it plumbum nigrum, used lead mined in Britain for the pipes that supplied water to their great public baths.

The expression "as heavy as lead" commonly describing anything of great weight, stemmed from the fact that lead for a long time, was one of the heaviest of metals. The uses of lead are legion and the possibilities of lead poisoning are all too frequently encountered. Industry perhaps, provides the largest source of chronic poisoning attributed mainly to lead dust. There are many sources in our daily lives that may contribute to lead poisoning. The toy lead soldiers which have long delighted children, have almost disappeared from the market. Paints, pottery, glazes, insecticides, cosmetics, containers, gasoline, contaminated food and water, are all potential sources of lead poisoning.

Lead is a general protoplasmic poison and acts by destroying and precipitating proteins. With continual exposure to lead, the metal accumulates in the bones and may not reveal the condition immediately. With the sudden release of the lead into the body fluids, the symptoms of poisoning occur.

There are three types of chronic symptoms. The colic type, commonly known as painter's colic, usually begins with dyspeptic symptoms, obstinate constipation and violent abdominal cramps. This is more frequent among artisans who use materials containing lead. The palsy type is a disorder of the nervous system commonly indicated by wrist drop. And the third is characterized by a predominance of cerebral symptoms such as hallucinations, mania, convulsions and coma. Although not a constant symptom, a blue line running along the margin of the gums where they join the teeth is a characteristic of lead poisoning and is sometimes an identifying feature.

LEAD CONTAINING COMPOUNDS

Symptoms: Headache, Delirium, Convulsions

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).
4. Give Aromatic Spirit of Ammonia (See No. 19).
5. Give magnesium sulfate as a cathartic (See No. 17).

CALL A PHYSICIAN!

LIME

Symptoms: Pain in mouth, throat, and stomach, Vomiting, Thirst.

Antidote and First Aid Treatment:

1. Give Acetic Acid Solution 6%, to neutralize the lime. Citric acid, vegetable juice or fruit juice may be given.
2. Give a Demulcent drink such as Gum Arabic. Egg white and milk may also be given (See No. 8).

CALL A PHYSICIAN!

M

MANDRAGORA

(Mandrake)

The search for a substance that will destroy pain is as old as the human race. The ancients employed many devices for annulling pain which to them was an unknown and mysterious force. Thus pain was exercised by ancient remedies administered in an atmosphere of incantations, charms, and mysticism. Helen of Troy as recorded in Homer’s Odyssey, called for “a drug to lull all pain and anger and bring forgetfulness of every sorrow”.

Mandragora is one of the oldest of these drugs employed “to bring forgetfulness”. It was early recognized for its value in relieving pain in surgery and child birth. This perennial plant belongs to the potato family growing wild in southern Europe and Asia since the beginning of time. Many legends have surrounded this potent plant due to the shape of its carrot-like root which sometimes takes a forked shape and was therefore likened to a human form. A legend which has persisted into modern times is recorded in the bible where through its magical power, Rachel who was previously barren, was able to bear a child. This legendary power has still persisted within the early centuries of the present era where women have worn this root as an amulet against sterility.

Dioscorides, a physician in Nero’s army, describes the hypnotic and analgesic effect of a wine decoction of mandrake root as used by the physicians of his day. It served then as an anesthetic for surgical operations. This wine decoction of mandragora enjoyed a lively use in “love potions” and in a “death-wine”. It was the custom of the ancient Romans to mix this drug with other drugs for the purpose of stupefying criminals sentenced to be crucified. Theodoric, King of the Ostrogoths, describes his use of this drug in preparing his many victims for the ordeal of crucifixion during his thriving reign in the 5th Century, A.D.

Many references are made in literature to the use of mandrake. Lucian asks the question “But do you think he had been so dosed with mandragora as to hear those things, and not to know?” “You sleep as if through mandragora”. Othello mourns “not poppy nor mandragora nor all the drowsy syrup of the world”.

MATCHES AND FIREWORKS

Symptoms: Nausea, Vomiting, Headache, Paleness, Burning and constriction in mouth and throat, Shock may develop, Acute cardiac failure, Delirium, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Give Milk of Magnesia as an antidote (See No. 14).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

MERCURY

Mercury is a silver-white metallic element unique in its liquid state which remains liquid even at ordinary temperatures. It flows so freely that it has acquired its name from the fleet-footed messenger of the gods in Roman mythology. This fluid quality suggested the name quick-silver taken from the Latin argentum vivum meaning live silver.

One of the most fascinating of all the elements, mercury’s history is very old. The ancient Egyptians were familiar with mercury sulfide as recorded in the Paprus Ebers of 1550 B.C. It is said that China and India knew quicksilver even before the Egyptians. Mercury continued to interest all subsequent ages and in the first century A.D., Dioscorides gave it the name by which it is known in medicine, hydrargyrum from the Greek signifying water and silver. The liquid metal was long thought to be poisonous, but Fallopius in the sixteenth century, records its internal use for the expulsion of worms in sheep and cattle. Salts of mercury were developed by the alchemists and Paracelsus in the sixteenth century, popularized the use of these salts for external and internal use.

One of the most interesting and valuable qualities of mercury, is that it expands and contracts in regular degrees when subjected to changes in temperatures. Torricelli in 1643, discovered that the pressure of the atmosphere will support a column of mercury thirty inches high. This led to the later invention of the mercurial barometer by Fahrenheit in 1720.

Mercury is found in nature as the element, as an amalgamation with gold and silver, and the mercurous chloride known as calomel. But by far the greatest source is the mineral ore known as cinnabar which is a sulfide of mercury. The early alchemists in their search for the Philosopher's Stone, thought they had found it in cinnabar. This ore has been mined in Spain even before the Christian era and it is still an important source today.

The compounds of mercury are used widely in industry and in medicine. Before the use of arsphenamine, mercury was the only drug known to be used in the treatment of syphilis. At one time, calomel, mercurous chloride, enjoyed wide popularity as a laxative but it is no longer considered safe for this purpose since chemical changes can take place to form more toxic derivatives. Mercury bichloride better known as corrosive sublimate, is a powerful mercurial and its solutions are colored as an aid in preventing accidental poisoning. This compound has earned a reputation as one of the most commonly used poisons for suicidal and criminal purposes, and its availability in tablet form has implemented many accidental deaths.

Mercury is a general protoplasmic poison and the symptoms usually appear promptly. Some of these are a burning and constriction in the mouth and throat, thirst, vomiting, abdominal pain, followed by shock, convulsions and coma.

MERCURY CONTAINING COMPOUNDS

Possible Cause of Poisoning: These are used in medicine, in the control of fungi in plants, in the control of maggots, and in antifouling paints for ships' bottoms.

Caution: May Be Fatal If Swallowed.

Symptoms: Pain in the throat, Cramps in stomach, Vomiting, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Demulcent drinks such as milk or white of eggs.

CALL A PHYSICIAN IMMEDIATELY!

METALLIC FUMES

Symptoms: Tight sensation in chest, Nausea, Vomiting, Headache.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Give a Stimulant such as Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

METHENAMINE

Symptoms: Gastric Disturbance, Skin rash, Inflammation of urinary tract.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Magnesium Sulfate (Epsom Salt) as a Cathartic (See No. 17).

CALL A PHYSICIAN!

METHYL ALCOHOL

Methyl alcohol is so dangerously poisonous that it is used for industrial purposes exclusively. Nevertheless, cases of poisoning have been known to occur through the adulteration of brandy and other alcoholic beverages. In its industrial application as a solvent, the exposure to methyl alcohol vapor is a continual source of apprehension. Poisoning has occurred by absorption through the skin either by application to the skin, or the accidental spilling over parts of the body. Above all, it affords a great temptation to individuals working with it who cannot resist a drink. They usually claim that their poisoning was incurred by exposure to its fumes, but this is a story that is usually discounted in such instances.

The intoxication caused by methyl alcohol is similar to ethyl alcohol, but its difference lies in the strikingly slow onset of symptoms and its extraordinary duration as a result of slower oxidation of the alcohol in the body. The symptoms may extend to three or four days and death has occurred even after a dose of less than one ounce.

The symptoms following a toxic dose, are observed in a marked fall of body temperature, convulsions which sometimes assume a tetanic character, vomiting, dilation of the pupil; reflexes are increased at first but after a day or two, there is a loss of sensation and a loss of reflex power. The most alarming characteristic of methyl alcohol poisoning, is its attack on the optic nerve causing damage that is usually irreparable. Vision begins to fail generally within 24 hours and progresses to complete blindness.

METHYL ALCOHOL

Symptoms: Excitement, Vomiting, Delirium

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIANI!

METHYL BROMIDE

Possible Cause of Poisoning: It is used as a fumigant and refrigerant.

Warning: Vapors are extremely hazardous.

Symptoms: Nausea, Vomiting, Drowsiness, Liquid may produce burns.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove victim to fresh air
2. Artificial Respiration may be necessary.
3. Remove clothing and wash the skin and eyes.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give a Stimulant such as Aromatic Spirit of Ammonia (See No. 19)

CALL A PHYSICIAN IMMEDIATELY!

METHYLENE BLUE

Symptoms: Nausea, Vomiting, Diarrhea.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).
4. Give Milk of Magnesia as a Cathartic (See No. 14).

CALL A PHYSICIAN!

METRAZOL

Symptoms: Coughing, Pallor, Bewilderment, Pupils dilated.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

MILK SICKNESS

Symptoms: Loss of appetite, Constipation, Collapse.

Possible Cause of Poisoning: This type of poisoning is caused by eating the meat or drinking the milk of animals who have eaten White Snakeroot or Rayless Goldenrod.

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).
2. Give a cathartic such as Milk of Magnesia or give an Enema (See No. 14 and No. 22).

CALL A PHYSICIAN!

MORPHINE CONTAINING COMPOUNDS

Symptoms: Nausea, Pupils contracted, Stupor, Deep coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia or hot tea or coffee (See No. 19).
4. Keep the victim warm and quiet.

CALL A PHYSICIAN!

MUSHROOMS

Mushrooms are fungi belonging to the Agaricaceae of which there are about 4,600 species. Long enjoyed as a gastronomic delight by the gourmet, mushrooms have also been dished up in forms to serve unsavory ends. The Amantas contain the poisonous varieties and growing wild, provide to the innocent as well as to the would-be mushroom connoisseur incalculable dangers.

Knowledge of the toxic properties of several varieties of mushrooms were known in the early Christian era and they are mentioned in works of medicine from the fourteenth to the sixteenth century. Mushrooms had a wide appeal as a poison because they could be so easily obtained, dried and mixed with food and wine. A story is told of a cardinal living in Rome in the sixteenth century, who had granules prepared from the dried Amanita muscaria which he kept in a secret receptacle in a ring.

To distinguish the edible from the poisonous mushroom has long engaged both fact and fancy. Such tests as the blackening of a silver coin or spoon when placed in a mass of poisonous fungi while they are cooking, is entirely discredited. The surest rule to follow is not to use any mushroom not recognized by previous experience to be edible.

For convenience the poisonous mushrooms can be divided into four groups. The genus Lactarius contains an irritant resin which causes severe and often fatal gastric enteritis. The juice of genus Helvella contains helvellaic acid which causes severe poisoning by destroying the red corpuscles. The species Amanitas phalloides known as skunk mushrooms, are commonly found in woods and in the borders of groves. These are also called deadly agaric and death angel since they are responsible for perhaps 90 per cent of the deaths caused by any other fungus. One of their poisonous ingredients is known as amanita toxin. The toxicity of this group is due to their hemolytic action and the degenerative changes caused in various internal organs. It takes several hours before the toxic symptoms appear and these are great prostration and collapse, cold sweats, stupor, sometimes delirium, and convulsions.

The fourth group includes mushrooms containing the alkaloid muscarine. The Amanita muscaria used frequently in decoctions for killing flies, has thus acquired the popular name fly agaric. This mushroom is found in groves of pine trees and along roadsides, and in some localities it is found in greater abundance than the harmless, edible mushroom. Although this species is a deadly poison, the natives of the Caucusus are said to enjoy a beverage made from it, and it is reported to have extraordinary intoxicating effects. The Japanese also prepare a mushroom drink for this purpose but use the species A. pantherina.

The symptoms of fly agaric not only include those caused by muscarine such as profuse salivation, contracted pupils and slowing of the pulse, but also those brought on by A. phalloides. The deadliness of fly agaric is pretty certain once it has entered the system. Every effort should therefore be made to prevent its absorption.

MUSHROOM POISONING

Possible Causes of Poisoning: Consuming the poisonous varieties.

Symptoms: Excess flow of saliva, Thirst, Colic, Vomiting, Diarrhea, Sweating, Twitching, Confusion, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Milk of Magnesia as a Cathartic and follow with large quantities of water. (See No. 14).
4. Give an Enema (See No. 22).

CALL A PHYSICIAN IMMEDIATELY!

MUSSEL POISONING

Possible Cause of Poisoning: Consuming Mussels which are contaminated.

Symptoms: Muscular pain, Numbness, Nausea, Vomiting, Diarrhea.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Cathartic such as Milk of Magnesia (See No. 14).
4. Give an Enema (See No. 22).
5. If a Stimulant is needed, give Aromatic Spirit of Ammonia, or a large quantity of hot tea or coffee (See No. 19).

CALL A PHYSICIAN IMMEDIATELY!

N

NAPHTHALENE

Symptoms: Restlessness, Depression, Twitching, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Give a Demulcent drink such as Gum Arabic. White of egg or milk may also be given (See No. 8).
3. Give Aromatic Spirit of Ammonia or strong tea or coffee (See No. 19).

CALL A PHYSICIAN!

NICOTINE

Nicotine is one of the most powerful of poisons, acting with a rapidity comparable to cyanide, and death has often occurred within a few minutes. And yet tobacco which is the parent substance from which the alkaloid nicotine is derived, is in daily use by millions of people throughout all parts of the world. The excessive regard shown for it is interestingly reflected in the words of Richard Burton, "Tobacco divine, rare, superexcellent tobacco which goes farre beyond all their Panaceas, potable gold and Philosopher's stones, is a soveraign Remedy for all diseases".

Tobacco is a plant native to tropical America and bears the botanical name Nicotiana Tobacum L (Fam. Solanaceae). Today, the tobacco plant is cultivated widely throughout most of the world but nowhere more abundantly than in the United States. The practice of smoking the leaves of the tobacco plant is as old as the natives of the new world. Columbus, when he landed at St. Domingo in 1492, found "many people, men and women, going to and from their villages, and always the men with a brand in their hands and certain herbs in order to take their smokes".

Nicotine, the chief alkaloid, was first isolated by Posselt and Reimann in 1828, and 4 to 6 per cent is said to be present in the tobacco leaf. This alkaloid is a colorless oil which turns yellow on exposure and evaporates readily at room temperature, the fumes of which are quite irritating to the nostrils.

When tobacco was first introduced into Europe, it was regarded as a drug and used in the treatment of dropsy and palsy. The toxic nature of tobacco and its alkaloids has discouraged any real interest in them as therapeutic agents. The largest present use of extracts of tobacco and solutions of nicotine, are as agricultural insecticides. The utmost care must be exercised in their application, for accidental splashes on parts of the body are readily absorbed and violent poisoning will result.

Severe poisoning in man can happen with as little as one-tenth drop. The symptoms appear in the form of dizziness, headache, tremors, and collapse as a result of paralysis of the respiratory system. Individuals unaccustomed to smoking tobacco or when they smoke to excess, develop such poison symptoms as severe nausea, vomiting, profuse perspiration and great muscular weakness. Of these effects, the most striking are the changes which take place in the circulatory and digestive organs and on certain secretions of the body. Smokers will lose their appetite and their salivary secretions will increase markedly.

Despite its dangers, tobacco has become an indisputable comfort to the habitual smoker. Why this is so has as yet received no satisfactory explanation. It has been found that smoking raises the threshold of cerebral irritability. Its use is graphically described in the words of a medical writer of the nineteenth century, "the smoke is used as a pleasant mode of losing time".

No discussion of the use of tobacco is complete without a word about the increased incidence of lung cancer which has caused great alarm in medical circles and which has been attributed to excess smoking of cigarettes. From the numerous reports of scientific researches into this problem, much evidence has been gathered to establish with some certainty that this danger is very real indeed.

NICOTINE AND ITS SALTS

Possible Causes of Poisoning: It is used as a medicine, insecticide, and in tanning.

Caution: Nicotine is highly toxic to man and animals.

Symptoms: Dizziness, Tremors, Collapse. Causes ascending motor paralysis of the nerve cord.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Artificial Respiration may be needed.
4. If a Stimulant is needed, give Aromatic Spirit of Ammonia or strong tea or coffee (See No. 19).
5. Keep warm and quiet

CALL A PHYSICIAN IMMEDIATELY!

NITROBENZENE

Possible Cause of Poisoning: This is used in organic synthesis, in toilet preparations, polishes, and as a solvent.

Symptoms: Nausea, Vomiting, Ringing in the ears, Breathing difficult.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

NITROGLYCERIN

Symptoms: Face flushed, Heart beat violent at first, then slow, Dizziness, Vomiting, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give mustard as an Emetic (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia, or hot tea or coffee (See No. 19).
4. Keep the victim warm and quiet.

CALL PHYSICIAN IMMEDIATELY!

O

OPIUM

Man, seeking a conquest of pain, found in this beautiful poppy plant the blessed release he sought but he also learned of its power over the human will so that the hapless victim of its seductive pleasures became reduced to the level of the beast. Of the drugs used in the ancient world for the relief of pain other than opium, included mandragora, Indian hemp, and hashish, but opium was mostly favored and it was believed to have been given to us by the Egyptian Sun God, Ra.

This plant is so widely distributed, that its original habitat is no longer known. References to its use as an anodyne are found liberally sprinkled through ancient writings. Heraclides (third century B.C.) describes the method of collecting opium which has not changed materially to this day. Its use for achieving a painless birth has an early history. The Queen Bernice, wife of Ptolemy Logus (309 B.C.), living on the Island of Kos, received a sedative in preparation for the birth of her child which is believed to have been a mixture of opium and mandragora. The potion known as "Nepenthe", was served to the guests of Menelaus by Helen of Troy so that their care could be driven away. Opium was said to be its chief ingredient.

Opium has long been used to quiet children, an old practice rife in India and in backward parts of Asia and Europe. A more recent use of poppy-tea has caused frequent deaths among young children.

Pyres, as the first European ambassador to China in 1516, made the observation that opium was eaten by "the kings and lords and even the common people, though not so much because it costs dear." The "Rajpoots of India" used an infusion of opium as we do of tea for their enjoyment of "well-being." Opium-smoking known as "Chandoo," is another well-known practice. The Chinese war-lords in their fight against the Chinese communists depended largely on the sale of opium for the means of carrying on that war.

The alcoholic preparation of opium, known as laudanum, is the most familiar form of this drug known to us in modern times. This preparation was originated by the celebrated English physician of the seventeenth century, Thomas Sydenham. He prepared this tincture by extracting opium and saffron with canary wine. He considered this preparation of great value in preventing the plague, but he did not take his chances with it when, in company with other physicians, he left London during the great plague of 1665. Sydenham esteemed opium so highly that he described it as being without equal as a remedy, bestowed upon mankind by a kind providence in order to lighten its miseries. He claimed for it powers which can moderate the violence of many maladies and even saw in it a cure for some of them. He viewed the field of medicine as less than whole were it not to possess laudanum as a remedy, and indeed, found it to be the only genuine cordial in its possession.

Since the first half of the eighteenth century, we have become familiar with such preparations of opium as “Black Drop” and “Quaker’s Black Drop” which were a Vinegar of Opium. Paregoric, a preparation much in present use, is actually an old one showing its origin from the Greek word paregoricon.

Opium, as it appears on the market, is an air-dried milky exudate obtained by making incisions in the unripe capsule of the poppy plant which bears the botanical name Papaver sommiferum Linne. This annual herb, grows to about four feet in height and its most prominent varieties are the white and black poppy. It is cultivated extensively in India, Persia, Turkey, Macedonia, Yugoslavia, Bulgaria, Manchuria, China, and Asia Minor. Its manner of collection shows little change from that described by Dioscorides almost 2000 years ago. An incision is made in the capsule of the plant from which a white juice exudes. This exudate is permitted to air-dry for 24 hours, and is then scraped off with a blunt knife. This dried exudate contains about 25 active principles which are known as alkaloids, and the most important of these is morphine.

Paracelsus, in the sixteenth century, was first to seek in man’s oldest analgesic, that active principle which carried the ultimate in its curative powers. He succeeded in making a tincture to which he added a solution of pearls, and gold salts, additives which he was certain increased its curative value. The isolation of morphine, named after the god of sleep, was not accomplished until 1803. The pharmacist Friedrich Wilhelm Serturner finally achieved this isolation of the true “essence” of opium. Other alkaloids were later discovered—codeine, thebaine, and papaverine. But the ultimate was achieved when, in 1952, morphine was first made synthetically by the chemists Marshall Gates and Gilg Tschudi.

OXALATE CONTAINING COMPOUNDS

Symptoms: Nausea, Vomiting, Severe pains in throat and stomach, Muscle twitching, Collapse.

Antidote and First Aid Treatment:

1. Give Milk of Magnesia (See No. 14).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

P

PARALDEHYDE

Symptoms: Excitement, Incoherence, Muscles relaxed, Respiration slow, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia. Give strong tea or coffee (See No. 19).
4. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

PARATHION

Possible Cause of Poisoning: This is used as an insecticide and is extremely toxic to insect, animal and to man. Food-stuffs may be contaminated and thus cause poisoning.

Caution: Poisonous when inhaled, swallowed, or when in contact with skin and eyes.

Symptoms: Headache, Blurred vision, Nausea, Weakness, Cramps, Diarrhea, Discomfort in the chest.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.

2. Artificial Respiration may be necessary.
3. Remove clothing and wash exposed parts of body with soap and water.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

PERMANGANATE CONTAINING PREPARATIONS

Symptoms: Burning and constriction in mouth and throat, Thirst, Vomiting, Abdominal pain, Shock may occur.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give Sodium Chloride as an Emetic (See No. 2).
3. Give a Demulcent Drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

PHENOL CONTAINING COMPOUNDS

Possible Cause of Poisoning: These are used as germicides, insecticides, antiseptics, fungicides, and wood preservatives.

Caution: May be fatal when swallowed. Corrosive to skin and eyes.

Symptoms: Whitish burns on lips and mouth, Vomiting, Dizziness, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

3. Give a Demulcent drink such as milk or egg whites, or Gum Arabic (See No. 8).

External Treatment:

1. Wash affected areas with large quantities of soap and water.
2. Treat as for a burn.

CALL A PHYSICIAN IMMEDIATELY!

PHENOLPHTHALEIN

Symptoms: Purging, Palpitation, Respiration labored.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

PHOSPHORUS—WHITE OR YELLOW

Possible Cause of Poisoning: This is used in rodent poisons, matches, and as an intermediate in the manufacture of chemicals.

Caution: No oils should be given.

Symptoms: Nausea, Garlic taste, Pain in stomach, Collapse.

Antidote and First Aid Treatment:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Give 1 tablespoonful of Medicinal Mineral Oil. **Do not give salad or vegetable oils.**
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

4. Keep warm and quiet and in a lying position.

CALL A PHYSICIAN IMMEDIATELY!

PHYSOSTIGMINE

Symptoms: Vomiting, Nausea, Muscular tremors, Contraction of pupils, Diminution of motor power, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia. Hot tea or coffee may also be given (See No. 19).
4. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

PICRIC ACID AND PICRATES

Symptoms: Lips, mouth and mucous membrane becomes yellow, Nausea, Vomiting, Convulsions, Collapse.

Antidote and First Aid Treatment:

1. Give Sodium Chloride as an Emetic (See No. 2).
2. Give a Demulcent drink such as Gum Arabic. White of eggs may be given following this with milk (See No. 8).
3. A Stimulant may be needed such as Aromatic Spirit of Ammonia (See No. 19).
4. Keep the victim warm and quiet.

CALL A PHYSICIAN!

PICROTOXIN

Symptoms: Rise in blood pressure, Slowing of pulse, Increased respiration, Vomiting, Contraction of the pupils, Salivation, Violent convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

PILOCARPINE

Symptoms: Flushing of face and neck, Profuse sweating and salivation, Nausea, Vomiting, Pupils contracted, Diarrhea, Collapse.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia. Hot tea or coffee may also be given (See No. 19).

CALL A PHYSICIAN!

PITUITARY POSTERIOR

Symptoms: Shock, Pallor, Rapid pulse, Fall in blood pressure, Air hunger, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).

CALL A PHYSICIAN!

PLASMOCHIN

Symptoms: Abdominal pain, Jaundice, Headache, Nausea, Vomiting, Fever, Weakness, Backache.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia. Hot tea or coffee may also be given (See No. 19).

CALL A PHYSICIAN!

POISONOUS PLANTS

Our primitive ancestors learned from repeated trial and error, the meaning of fruits, berries, and leafy growths surrounding them in nature, in terms of food, poisons, and healing powers. They became skilled in their selection as aids in hunting for food and in warring upon their enemies. Arrows fortified with vegetable poisons are the earliest examples of man harnessing a knowledge for his own ends. The Greek word for bow is toxon from which we derive the name of our modern science of toxicology.

The records of man's interest and reflection on his developing knowledge of nature's prodigality reach far back into the past. Ancient Egyptians were aware of the toxic properties of aconite, henbane, and poison hemlock. The bible relates the incident of the famished "sons of the prophet" who, after eating a puree of "wild gourds" poisoned by colocynth or "colocynth apple," cried out to Elisha "there is death in the pot!" (4th Chapter of 2d Kings). The execution of Socrates in 399 B.C. with a cup of poison hemlock, raised a poisonous plant to an unprecedented glory. Shakespeare kills Hamlet's father with a vial of henbane extract and he adds hemlock to the hell-broth mixed by his witches in Macbeth.

In our present day, the dangers lurking in unknown plant life are the concern of the unwary human who chances to venture into meadow and woods in which he is unschooled by knowledge and experience. Like his primitive ancestors, he learns quickly and often with sad results, when by touching plants and eating fruits and berries, distressing dermatitis or poisoning develops. By far the greatest number of casualties take place among domestic livestock. Their ingestion of poisonous plants has caused animal losses of millions of dollars emphasizing the need for an increased knowledge of poisonous grazing plants.

In the United States there are at least 525 species of plants known to contain poisonous principles. Poisonous plants can be fitted conveniently into three main groups. In the first are those plants which must be eaten to develop their poisonous properties; the second group poison when handled, producing dermatitis, skin eruptions, or inflammation; and the plants in the third group produce allergic reactions.

The most virulent of the poison plants and more common than any of the others, are those that contain alkaloids as active principles. Familiar examples of these alkaloids are cocaine, morphine, nicotine, quinine. Glycosides are also poisonous principles in plants but these require the action of enzymes, acids, or other catalysts before they develop their poisonous character. Examples of these are esculin, from the bark of horsechestnuts, and amygdalin, from the kernels of cherries and plums. Saponins are glycosides recognized by their soaplike action in the presence of water. These are present in such common plants as soapbark, soapberry, soapplant, soapweed, and soapwart.

The cyanogenetic glycosides are frequent dangers since their poison is hydrocyanic acid, also known as prussic acid, which is developed by the action of enzymes in the gastric juices. Examples of such plants are the plum-cherry-choke-berry-peach genus, (Prunus), many legumes, and certain grasses such as Velvet Grass, Johnson Grass, Sudan Grass, and Sorghum.

Livestock is observed to avoid poisonous plants when more palatable and harmless plants are available in their pasture. But certain conditions may sometimes develop that contribute to animal poisoning. Some of these are: a shortage of suitable grazing, occurring during winter months; an improperly balanced diet which the animal unconsciously seeks to supplement when pastures are overgrazed or made short through drought or other such conditions; and grazing in newly plowed areas where poisonous roots are exposed or dormant seeds of poisonous plants are newly sprouted such as the cocklebur and crotalaria.

More usual and more commonly experienced is plant poisoning that takes form in an uncomfortable dermatitis. Poison ivy, poison oak, and poison sumac are the varieties responsible for this kind of poisoning. These were well known to the Indians and the first colonists. Captain John Smith described in his Journal, "The poisonous weed, … but being touched causeth redness, itching, and lastly blysters. …" It is estimated that 75 per cent of our population is susceptible to the poisoning of these plants and their noxious relatives. They are prevalent on the roadside, on hedges, near fences, and sometimes they find their way into private gardens and arbors. Many communities have taken organized steps toward eradicating these poisonous plants by means of burning, uprooting, and spraying them wherever they are found. The "tenderfoot" hiker needs to know the identification and make-up of these plants before venturing into the unknown.

Poison ivy is the most familiar, poison sumac is more rare and mostly found in moist, swampy areas, and poison oak closely resembles poison ivy in appearance and action. Poison ivy is recognized by its leaves which are arranged in clusters of three, varying in shape and size and the surfaces are often smooth and shiny but some are known to be hairy and dull. They are green in summer and russet colored in the fall. Its flowers are small, clustered and greenish-white, blooming in May and June. The fruit is white, waxy, and formed in clusters, resembling mistletoe. Poison ivy is ordinarily a trailing vine, climbing telephone poles, trees, and fences, but under conditions unfavorable to growth as a vine, it will grow into a small shrub sometimes reaching a height up to four or five feet. This bushy plant dies back to the ground each year, being found in places where it is cut back frequently.

The poisonous principle in these plants is a nonvolatile oil known as toxicodendrol which has recently been named urushiol. Early in its history, this principle was thought to be volatile and poisoned a susceptible individual while passing by in its vicinity. We know now that every part of the plant is dangerous and that dermatitis is caused only when there is actual contact with its poisonous principle. This substance is sticky and adheres to most objects. While burning poisonous plants, it is necessary to take great care that one does not come in contact with the smoke which carries particles of the poison.

POISONOUS PLANTS IVY POISONING

Possible Cause of Poisoning: Coming in direct contact with these poisonous plants.

Symptoms: Itching dermatitis.

Antidote and First Aid Treatment:

1. Wash the affected areas with soap and water.
2. Apply Calamine Lotion or apply cold compresses of Saturated Solution of Sodium Bicarbonate (baking soda), or a solution of Epsom Salt.

SEE A PHYSICIAN!

POTASSIUM NITRATE

Symptoms: Vomiting with much pain, Profuse purgation.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia or a large quantity of strong tea or coffee (See No. 19).

CALL A PHYSICIAN!

PROCAINE AND LOCAL ANESTHETICS

Symptoms: Fall in blood pressure, Slow heart beat, slow respiration, Death due to paralysis of the respiratory center.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia as a Stimulant (See No. 19).

CALL A PHYSICIAN!

PYRETHRUM

Possible Cause of Poisoning: This is used as a fly spray, and in insecticides.

Symptoms: Paralytic action on the nervous system, Confusion of mind, Dermatitis may occur.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air
2. Wash the exposed parts with soap and water.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN!

Q

QUATERNARY AMMONIUM SALTS

Possible Cause of Poisoning: These are powerful germicides. Foods are frequently contaminated with these germicidal agents.

Symptoms: These exhibit the symptoms of an irritating poison.

Antidote and First Aid Treatment:

If Swallowed:

1. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

QUININE

Symptoms: Ringing in the ears, Headache, Dizziness, Disturbed vision, Vomiting, Insomnia, Coma.

Antidote and First Aid Treatment:

1. Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia. Hot tea or coffee may also be given (See No. 19).

CALL A PHYSICIAN!

R

REDUCING DRUGS CONTAINING DINITROPHENOL

Symptoms: Sweating, Fever, Headache, Loss of appetite, Sallowness, Convulsions.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Cathartic such as Magnesium Sulfate (See No. 17).
4. A Stimulant may be needed such as Aromatic Spirit of Ammonia. Large quantity of cold tea or coffee may be given (See No. 19).

CALL A PHYSICIAN!

S

SALICYLATES

Possible Cause of Poisoning: These are used in medicine.

Symptoms: Headache, Deafness, Nausea, Vomiting, Flushing, Sweating, Thirst, Drug rash, Excitement, Confusion, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

SANTONIN

Symptoms: Visual disturbance, objects appear blue at first then yellow in color, Headache, Dizziness, Ringing in ears, Vomiting, Convulsions, Stupor.

Caution: Do not use oils or fats.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. If a Stimulant is needed, give hot tea or coffee, or Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

SELENIUM CONTAINING COMPOUNDS

Possible Cause of Poisoning: These are used as herbicides. Poisoning may occur by inhaling the dust or spray mist.

Caution: May be fatal if swallowed by eating plants which have been sprayed by these.

Symptoms: Metallic taste, Vomiting, Cramps, Nervousness.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give a Demulcent drink such as Gum Arabic (See No. 8).
4. Have victim lie down and keep him warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

SILVER NITRATE

Silver nitrate is among the most powerful of the chemical germicides and therapeutically, among the most important compounds of silver. The long practice of routinely applying silver nitrate to the eyes of the newborn as a prophylactic measure against ophthalmia neonatorium, is well known, and is a compulsory practice in many states.

Silver nitrate was familiar to the early alchemists who prepared a remedy called pillulae lunares or Pills of the Moon. These contained silver nitrate, opium, musk, and camphor, and were employed in the cure of mental diseases. From the present view, it is more likely that the value of this formulation rests more solidly on the presence of opium.

Following the conversion of astronomy to astrology by the Mesopotamians, metals acquired a reference to the planets shortly after the Christian era. Silver, being the whitest of metals and susceptible to the highest polish, became associated with the moon, and the alchemists assigned it the symbol of the crescent moon, hence its application in mental therapy since its disturbances were thought to be caused by the moon.

Silver nitrate was first discovered by Geber, an Islamic Arab in the eighth century, and given the name lapis infernalis. It was later changed to the Latin lunar caustic which more aptly described its escharotic nature. Other silver salts with varying degrees of germicidal action have been developed. These were the results of an attempt to reduce the objectionable irritant action of the nitrate.

When silver in any of its forms, finds its way within the body, either as a medicinal or through industrial contamination, silver deposits form in the connective tissue and a slate blue discoloration of the skin becomes evident. This condition is called argyria and it is with great difficulty that it can be removed.

Silver nitrate as a violent poison produces the symptoms of gastroenteritis, coma, convulsions, and paralysis.

SILVER CONTAINING COMPOUNDS

Symptoms: Pain in throat and stomach, Vomiting, Collapse.

Antidote and First Aid Treatment:

1. Give Sodium Chloride as an antidote and Emetic (See No. 2).
2. Give a Demulcent drink such as Gum Arabic (See No. 8).
3. Give a Cathartic such as Magnesium Sulfate (See No. 17).

CALL A PHYSICIAN!

SNAKES

Snakes have engaged the imagination as few other animals have done, beginning their sinister history with original sin. Cleopatra has further enhanced their mystery and electrifying personality by choosing the asp to share her triumph over death.

As a nocturnal creature, its ways are not generally observed, its movements are unpredictable for it may strike out suddenly with the sharpness of a rapier point. Actually he is an unaggressive fellow and only when he is disturbed or feels himself in danger does he gather his full forces of attack. Many harmless snakes have earned themselves fearsome reputations and some have even been invented by over-wrought imaginations. One of these is the mythical hoop snake which is said to grasp its tail in its mouth, making a hoop of its body, and coursing with great speed up hill and down dale.

Snakes are largely useful animals, seeking as food rodent pests and noxious insects. The unwary hunter, fisherman or picnicker who exposes himself in unknown natural places, often finds himself in grave danger unless he has learned beforehand what varieties of snakes are poisonous in that district. In tropical countries where snakes are more wide-spread, the fatal incidence of snake bite is very high. Because of their light clothing and the habit of going about barefoot, men are particularly vulnerable to snakebite. It has been estimated that between 30,000 and 40,000 such deaths occur each year throughout the world. The largest number of deaths take place in countries of southern and southeastern Asia with an estimated 25,000 to 35,000 deaths. South America follows closely claiming 3,000 to 4,000 deaths. In North America it is believed that 300 to 500 deaths are accounted for while Europe may have about 50 deaths. Burma suffers from the highest death rate, India comes next and Pakistan follows. These figures are impressive and present the magnitude of world danger from snake bite.

There is a popular belief that snakes are cold blooded. Unlike birds and mammals, they lack internal heat controls and consequently flourish more favorably in warmer climates where the external warmth can bring the internal temperature up to about 60° F., the body temperature best suited for activity. This is a factor in the world distribution of snakes for they are characteristically animals of tropical, subtropical and temperate regions.

In classifying all snakes, it is convenient to place them into four groups. In the first are the pit vipers, taking their name from a deep pit located between eye and nostril. These include the water moccasins, copperheads, rattlers, and the fer-de-lance, a native of Central and South America and subject of many a romantic tale. In the second group are the fearsome cobras found largely in Asia and Africa. The mambas and coral snakes are species allied to the cobras. The third group contains the true vipers which include the notorious Gaboon viper, the Rhinoceros viper, puff adder, the Russell viper, and the asps. The fourth group includes the sea snakes chiefly native to the Indian and Pacific oceans.

The poisonous snakes of North America belong either to the Elapine or Crotaline class of snakes. The Elapine group are related to the cobras and are very deadly. Of these there are two species in the United States, the coral snake and the smaller Sonoran coral snake. The pit vipers represent the Crotaline group which includes the rattlesnakes, the cottonmouth water moccasins and the copperhead or highland moccasin.

Poisonous snakes can also be classified on the basis of their venom. The toxic portion of snake venom is composed of complex proteins the nature of which has not been exactly determined. A distinction is made according to its effect which is either neurotoxic or hemotoxic. The first acts upon the nervous system by irritating and paralyzing nerves especially those which control breathing and heart action. The cobras and coral snakes are representatives of this type of poison. The hemotoxins have the peculiar power of dissolving the walls of blood vessels particularly those of the capillaries and may cause the blood to clot either too readily or not sufficiently. The peril in this type of poisoning is in the havoc caused to internal organs from the circulation of these hemotoxins. Kidneys are attacked directly and they may become jammed with the crystals of the poison from destroyed blood cells. The snakes typical of this type of venom, are the rattlesnakes and copperheads. Of the two, neurotoxin venom is the more potent because a minute quantity will kill an individual where in the other, a considerably larger amount is necessary before it will take a similar toll. The venom of cobras and coral snakes is largely composed of neurotoxin which makes their bite painful and very dangerous with little swelling or ulceration. The venom of the pit vipers contains a larger amount of hemotoxin although neurotoxins are present. The seriousness of the bite will vary with the proportion of either type of venom.

Contrary to legend, a snake does not sting with its tail, nor with its tongue. There is only one way it will inject its venom and that is through the teeth. These teeth are fangs which have become large and hollow, behaving much like curved hypodermic needles, and located to the front of the upper jaw, usually one on each side. The fangs of the elapine group of snakes are short and inject their venom by a chewing process, while the others have their fangs attached to movable bones facilitating the rapid injection of venom. The bites of non-poisonous snakes, are only surface bites, sometimes shaped like a horseshoe. The poisonous bite will show the puncture made by the fangs.

To determine the seriousness of a snake bite, several factors must be considered. The size and condition of the individual, the location of the bite, the amount, strength, and type of venom injected and the depth to which the fangs have penetrated into the flesh. Most bites take place on legs, feet, and to a lesser extent, on arms and hands. Only a very few will occur on head and body.

Anyone planning a trip through snake country is advised to carry a snake-bite kit. These kits are fitted out with essential equipment to take care of such an emergency.

A victim of snake bite should be kept as still as possible to prevent hastening the circulation of the poison. Do not give alcohol. Apply a tourniquet a few inches above the bite, immediately. Make an X-shaped cut through the fang marks with a sterilized knife or razor blade, being careful not to go in too deeply. Apply suction for about thirty minutes and for about twenty minutes of each hour thereafter, to induce the seepage of lymph. Keep the victim warm. Antivenom is of considerable value in treating severe snake bite. For an individual who is sensitive to horse serum, antivenom should not be used.

SNAKE BITES

Symptoms: Hemorrhage or Coagulation, Faintness, Cold Sweats, Nausea, Vomiting, Unconsciousness.

First Aid Treatment:

1. Keep the victim quiet.
2. Apply a tourniquet above the bite. Release for one minute every twenty minutes thereafter, to induce the seepage of lymph.

3. Make an X-shaped cut through the fang marks with a sterilized knife or razor blade. Do not cut too deeply.
4. Keep the victim warm.

CALL A PHYSICIAN!

SPIDERS THE BLACK WIDOW SPIDER

The Black Widow Spider, America's most poisonous spider, and which is found to a larger extent in the south, is also known throughout the rest of the world. Since she makes her home in dark, obscure corners, mainly on the outside of houses, in garages, sheds, basements, manholes, and the like, she is an unseen enemy who may attack suddenly with her sharp, venomous sting.

Many notions are spread about her strong habits and the intensity of her striking power which makes her out a more deadly menace than she is in reality. Ordinarily, she is not an aggressive creature but is proved dangerous only when she is hungry.

The Black Widow Spider has had a long history and the ancients often refer to her deadliness to mankind. Pliny describes her as a ferocious creature and warns that she is most dangerous in the summer. The western Indians have had long practice in using her venom for the tips of their arrows.

This spider has been known by many names, the Poison Lady, the Deadly Spider, the Poison Spider, the Hourglass Spider, the She-button Spider are among them and only recently has the name, the Black Widow Spider come into general use. This latest name is based on the assumption that she eats her mate immediately after wedlock. The Black Widow Spider bears the impressive zoological name of Latrodectus mactans and belongs to the order Araneida. She is about a half inch in length, is colored a shiny black, has long wiry legs and a bulbous abdomen. The mature female has a red or orange hourglass shaped marking on her belly while the male who is smaller in size, and the young have yellowish markings on the upper side of the body. When the mature female is viewed through a magnifying glass, she is observed to have eight eyes, claws, and fangs which have tiny openings at their tip ends through which she emits her poison when these sharp points pierce the human skin. Her venomous bite, the peculiarly shaped eyes, hairy appearance, her eight legs and her untidy web contribute to the general horror which she excites.

Although she is very cannibalistic, the legend in which the Black Widow is said to eat her spouse without exception, immediately after wedlock is not entirely according to fact. She will eat him as well as devour her many young, only when she is very hungry and when her usual diet of insects and other small creatures is not available. In this respect she is less to be blamed as a menace to the male than are the scorpion, the tarantula, or the trap-door spider. Since her life span is about a year in length, she reproduces profusely. She will lay about 3 to 400 eggs at one time all within a whitish silken sac about the size of a pea. These eggs hatch within 3 or 4 weeks and there then ensues a struggle of the young to survive the cannibalistic habit of their mother.

Concerned with her life struggle, her means of defense is her sting which she uses against humans only when she believes herself in danger of attack. When roughly disturbed, she will curl up her legs and assume a death-like posture. Her bite causes a stinging sensation at the point where it has punctured the skin and a tiny red spot appears which is surrounded by a whitish lump. A sharp pain will develop within a few minutes to an hour and will spread to a wide area of the body. This venom is a poison to our nervous system and when injected, may cause death. However, death is not alway inevitable since the degree of poisoning depends not only upon the amount of poison injected into the victim, but also upon his state of health. The amount of poison injected is also dependent upon the size of the creature, its maturity, whether she is pregnant, her mood, and the extent of her hunger. The immediate physical symptoms caused by her venom are vomiting, cramping and aching, chills, dizziness, profuse perspiration, muscle spasms, and difficult breathing.

SPIDER POISON (ARACHNIDISM)

Symptoms: Excruciating pain at the site of the bite, Pain in stomach, Cramps in legs, arms, and back, Weakness, Vomiting, Chills, Dizziness, Profuse perspiration, Difficult breathing.

Antidote and First Aid Treatment:

1. Put the victim to bed.
2. Apply Tincture of Iodine on the site of the bite.
3. Call a physician immediately for the victim may need antivenom and hospitalization.

STRYCHNINE

Strychnine is one of the most violent of poisons. No more than one-half to one grain is required to produce its horrifying toxic symptoms and for death to follow. This alkaloid and the alkaloid brucine, are both found in the dried, ripe seeds of Strychnos Nux Vomica L. and Strychnos Ignatia, our official supply coming from nux vomica.

The nux vomica tree which grows to about 40 feet in height, is native to India and the East Indies. Its fruit from which comes our supply of seeds, is orange-like in shape and size. Nux vomica is also known by such names as Dog Button, Quaker Button, and Poison Nut.

Europe was not aware of nux vomica as a drug until the fifteenth or sixteenth century at which time it was no more than a drug-shop poison used for killing dogs and birds. Valerius Cordus in the sixteenth century, described nux vomica seeds and Gerard (1578) in “The Herbal,” cautions that “because of its poisonous character, it was not to be given inwardly, but mixed with other compositions and that very cautiously by the hands of a faithful Apothecarie.”

Strychnine was first discovered by the French pharmacists Pelletier and Caventou in 1818, in the ignatia beans. A year later, they found the alkaloid brucine in these seeds which behave much like strychnine but is only about one-thirtieth as strong.

The white crystals of strychnine are intensely bitter and are therefore used as a tonic in which its bitter taste is perceptible in the proportion of one part in 700,000 of water. This drug is also used as a stimulant for the reason that its most striking effect is its ability to stimulate reflex excitability of the spinal cord. It is employed as a circulatory stimulant in a wide variety of conditions, some of which are surgical shock, collapse from hemorrhage, and of singular importance, in counteracting the poisoning caused by such depressants as ether, chloroform, alcohol, and the barbiturates. It is a valuable respiratory stimulant in the narcotic poisoning of such drugs as opium and chloral and is also of service in nicotine poisoning.

The chief use of strychnine is as a vermin killer and it is during its use for this purpose that its dangers are more fully encountered. When toxic doses of strychnine find their way into the body, an excess reflex irritability is set up leading to tetanus-like convulsions in which all the muscles of the body are involved. The spasms are frequent with sudden bending backward of the body, the limbs tremble, the neck stiffens, and the face is contorted in a sardonic grin. Consciousness is not affected until asphyxiation occurs from the stiffening of the chest muscles. Death usually ensues from asphyxiation.

STRYCHNINE AND ITS SALTS

Possible Cause of Poisoning: This is used in medicine, and as a rat and other vermin poison.

Caution: This is a Convulsive Poison.

Symptoms: Tightness in chest, violent spasms, tetanus-like.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Have victim lie down and keep him warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

SULFA DRUGS

With the turn of the present century, chemotherapy made its first appearance. By this method, infectious diseases are treated with chemical substances which possess minimium toxicity and maximum action in destroying the organism. This was a discovery so monumental that one may justly call it a chemical revolution since it changed, essentially, the old concepts of therapy.

Paul Ehrlich was the founder of this science by achieving his great success in treating syphilis, a bacterial disease, with salvarsan or 606. Other scientists, recognizing the unlimited medical uses thus made possible, explored new avenues of research.

Thomas in 1906, working at the Liverpool School of Tropical Medicine, discovered that mice infected with trypanosomes could be cured of the disease with a compound of arsenic called atoxyl. Shortly before World War II, the introduction of sulfanilamide marked a truly dramatic advance in antibacterial chemotherapy. This drug was not a new one having been originally synthesized by Paul Gelmo, a German chemist, while working with azo dyes. Other chemists observed that dyes containing the sulfanyl group showed a great affinity for the protein of silk and wool. This raised the question, could a similar affinity exist between these compounds and the protoplasm of bacteria? Eisenberg, in 1913, established the truth of this postulation when he found that a dye called chrysoidine, and belonging to this group, showed pronounced antibacterial action in vitro.

The magnitude of his discovery was not immediately recognized. For it waited until 1932 before the therapeutic possibilities of the sulfanilamides were studied sufficiently to admit them into medicine. In 1935, Gerhard Domagk reported the startling fact that prontosil, a sulfanilamide drug, was able to kill streptococcal infections in mice. This work won him the Nobel prize in medicine for 1939. Other countries quickly investigated the possibilities of this remarkable chemical. Researchers in France, England, Sweden, and the United States, worked with countless related compounds before they found the few that proved most useful. These were sulfapyridine, sulfathiazole, sulfadiazine, sulfamethazine, and many others. Many of the early sulfa drugs have now been replaced with newer sulfa drugs more effective and specialized in antibacterial potency and which are less toxic.

All the sulfa drugs have in common the chemical group SO_2N which vary in their arrangement to give the special properties each compound possesses. These drugs have become invaluable in the cure of pneumonia, dysentery, meningitis, blood poisoning, the bone infection osteomyelitis, and some venereal diseases. The theory of their action is said to be the prevention of certain chemicals from forming which are required by the bacteria for their growth.

Sulfa drugs have their attendant evils. Many individuals are unduly sensitive to local applications, and many exhibit a hypersensitivity that must be watched for.

SULFANILAMIDE

Possible Cause of Poisoning: This is used in medicine.

Symptoms: Weakness, Vomiting, Weak pulse.

Antidote and First Aid Treatment:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Give 5 grains of Sodium Bicarbonate and have the victim drink a half glassful of water.

CALL A PHYSICIAN IMMEDIATELY!

SULFUR DIOXIDE

Symptoms: Irritating to eyes, Respiration painful and difficult, Paralysis, Convulsions, Asphyxiation.

Antidote and First Aid Treatment:

1. Remove to fresh air.
2. Give Artificial Respiration if necessary.
3. Give hot tea or coffee, or Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

SULPHONAL

Symptoms: Giddiness, Unable to stand or walk steadily, Noise in ears, Headache, Confusion, Weakness, Gastric pain, Stupor.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give a Stimulant such as Aromatic Spirit of Ammonia (See No. 19).

CALL A PHYSICIAN!

T

THALLIUM CONTAINING COMPOUNDS

Possible Cause of Poisoning: These are used in depilatories, and as a rat poison.

Symptoms: Pains in muscles, Twitchings, Loss of appetite, Vomiting, Abdominal pain, Disturbances of sight and hearing may occur

Antidote and First Aid Treatment:

1. Give Sodium Chloride as an antidote and Emetic (See No. 2).
2. Give strong lukewarm tea or coffee or Aromatic Spirit of Ammonia as a Stimulant (See No. 19).

CALL A PHYSICIAN!

THIOCYANATES, ORGANIC

Possible Cause of Poisoning: These are used as insecticidal sprays. Eating of foodstuffs which have been sprayed with these insecticides.

Symptoms: The thiocyanates generally cause an increased dilation of the heart with a decreased rate of contraction. In large doses, an eventual cessation of contraction may occur.

Caution: Harmful when swallowed. These are absorbed through the skin. Inhalation and contact with eyes, skin, are dangerous.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.

2. Remove clothing and wash exposed areas.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Keep the victim warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

TOXAPHENE

Possible Cause of Poisoning: This is used as an insecticide. Poisoning may result from the inhalation of the dust or spray mist. Animals have been poisoned by eating hay treated with toxaphene.

Caution: May be fatal when swallowed. Avoid inhaling the fumes or contact with skin or eyes.

Symptoms: Giddiness, Headache, Nausea, Vomiting, Abdominal pain, Salivation, Sweating, Disturbed vision, Mental confusion, Rapid respiration, Tightness in chest, Convulsions, Paralysis, Coma.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove victim to fresh air.

If Swallowed:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

2,4,5-TRICHLOROPHENOXYACETIC ACID

Possible Cause of Poisoning: This is used in animal bait.

Caution: Toxic when swallowed. Avoid contact with eyes, skin, or breathing apparatus.

Symptoms: Burning of lips and mouth, Vomiting, Dizziness, Collapse, Shallow breathing, Coma.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.
2. Remove clothing and wash exposed areas of body with soap and water

If Swallowed:

1. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

TURPENTINE

Symptoms: Burning sensation in mouth, throat, Irritation to respiratory tract, Nausea, Vomiting, Abdominal pain, Diarrhea, Shock may occur.

Antidote and First Aid Treatment:

1. Give an Emetic such as mustard (See No. 1).
2. Give Magnesium Sulfate (See No. 14).
3. Give Aromatic Spirit of Ammonia as a Stimulant. Black coffee may also be given (See No. 19).
4. Give a Demulcent drink such as Gum Arabic (See No. 8).

CALL A PHYSICIAN!

V

VERATRUM VIRIDE

Symptoms: Burning in throat. Pain in stomach, Nausea, Vomiting, Headache, Feeling of anxiety, faintness, Shallow breathing, Convulsions may occur.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as mustard (See No. 1).
3. Give Aromatic Spirit of Ammonia as a Stimulant (See No. 19).

CALL A PHYSICIAN!

VOLATILE OILS

Symptoms: Nausea, Vomiting, Flushing, Sweating, Fever, Excitement, Convulsions, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give an Emetic such as Sodium Chloride (See No. 2).
3. Give Aromatic Spirit of Ammonia (See No. 19). Strong tea or coffee may also be given.

CALL A PHYSICIAN!

Z

ZINC CONTAINING COMPOUNDS

Symptoms: Metallic taste in mouth, Pain in stomach, Bloody vomiting, Rapid breathing, Dilation of pupils, Convulsions, Paralysis of voluntary muscles, Coma.

Antidote and First Aid Treatment:

1. Give Universal Antidote (See No. 21).
2. Give Sodium Chloride as an Emetic (See No. 2).
3. Keep the victim warm and quiet.
4. Give Aromatic Spirit of Ammonia. Strong tea or coffee may also be given (See No. 19).
5. Give a Demulcent drink such as Gum Arabic. White of egg may also be given (See No. 8).

CALL A PHYSICIAN!

ZINC DIMETHYL DITHIOCARBAMATE

Possible Cause of Poisoning: This is a bactericide.

Caution: Dangerous when swallowed. Avoid contact with skin, eyes, or inhalation.

Symptoms: Metallic taste in mouth, Pain in stomach, Purging, collapse.

Antidote and First Aid Treatment:

If Inhaled:

1. Remove to fresh air.

2. Wash the affected areas.

If Swallowed:

1. Give an Emetic such as Sodium Chloride (See No. 2).

CALL A PHYSICIAN IMMEDIATELY!

ZINC PHOSPHIDE

Possible Cause of Poisoning: This is a rodenticide.

Caution: May be fatal if swallowed. Inhalation of fumes are dangerous.

Symptoms: Metallic taste in mouth, Nausea, Vomiting, Diarrhea, purging, Abdominal pain, Chills, Fever.

Antidote and First Aid Treatment:

1. Give an Emetic such as Sodium Chloride (See No. 2).
2. Victim should lie down. Keep warm and quiet.

CALL A PHYSICIAN IMMEDIATELY!

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